Scientific American.

A JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, AGRICULTURE, CHEMISTRY, AND MANUFACTURES.

VOL. III.—No. 2. NEW YORK, JULY 7, 1860. NEW SERIES.

IMPROVED LATHE FOR TURNING BEADED WOOD-WORK.

Those who adopt the most improved mechanism for producing articles of manufacture obtain advantages over those who are too conservative to float onward on the tide of progress. A very great variety of ornamental beaded work is employed for chair rounds, broom and tool handles, and various other purposes. The accompanying illustrations are a perspective side sectional and minor sectional of an improved pattern lathe for turning such work with great rapidity; and it is adapted for an endless variety of patterns and articles of different sizes. The sticks are taken into the lathe rough and carried through a hollow mandrel, where they are acted upon by revolving tools, which turn the sticks into a perfect round form, and produce the ornamented surfaces at one continuous operation. Close attention is necessary to the description of the figures to obtain a perfect understanding of the operations.

A is the frame of the machine; B is the driving shaft, which has two pulleys, C C, within the frame, and another hidden in Fig. 1, from which the belt, *a*, passes over the upper pulley, E. Belts, *b b*, also pass from the under pulleys over the disks, F G, which are placed loosely on the hollow mandrel, H, which is fixed on a cross-piece, *c*. A die, *d*, is fitted at each end of the hollow mandrel. These dies are annular pieces of metal, which serve as bearings for the stick in the mandrel. Dies of different sizes, according to the size of the sticks to be turned, may be used. The spurs, *e e*, prevent the sticks from turning.

The disk, F, where the sticks are entered, is the placed where they are first operated upon by the gouge-cutter, I, to turn off the rough and make them perfectly round. A nut, *f*, is placed at the center of the disk. The cutter, I, revolves with the disk, and is attached to it by an adjusting screw, *g*, to be placed further in or out to suit sticks of different sizes. J, Fig. 1, is an adjustable feed wheel, secured on a standard, which is revolved by a wheel operated by a screw on the cross-shaft, N. A grooved guide bar, *i*, is attached to the standard of wheel, J. There is also an adjustable guide pulley, K, on the other side of the guide groove, *i*. The stick is fed into the mandrel, as shown in Fig. 2.

The cross-shaft, N, has a screw on it which gears into the wormwheel, P, and gives it motion. A pattern, Q, formed of a strip of metal, is secured by screws on the inner face of the wheel, P, and it is notched in such a form as to produce a corresponding form in the stick; it is therefore a guide pattern. On the hub of wheel, P, are two collars, U U′, secured by screws, and there are pins, *v v*, which are to operate the clutch for actuating the pattern wheel. On shaft, N. are two bevel wheels, *w w*, between which is a clutch, *v*, to which is attached a slide, R, for moving it back and forth, so as to gear with the wheels, *w w*, alternately, and give the shaft, N, its forward and reverse motion. A lever, W, secured to the front part, has a spring, *x*, bearing upon one of its ends. X, is a slide bar, or it may be called a "tracer," which is secured in bearings, *y′*, below the mandrel. One end of this rod bears against the pattern, Q; to its opposite end is secured the pendant arm, *a′*, which is attached to a sliding collar, V, on the hub of the disk, G, at the back end. A collar, Z, on the hub turns with it. A jointed lever, A′, is fitted in the disk, G, and is attached to the sliding plate, B′, on the face of the disk, G, as shown in Fig. 3. The finishing knife (more than one may be used), C′, which produces the beading ornamentation, is secured to plate, B′, to which a spring, D′, is also attached.

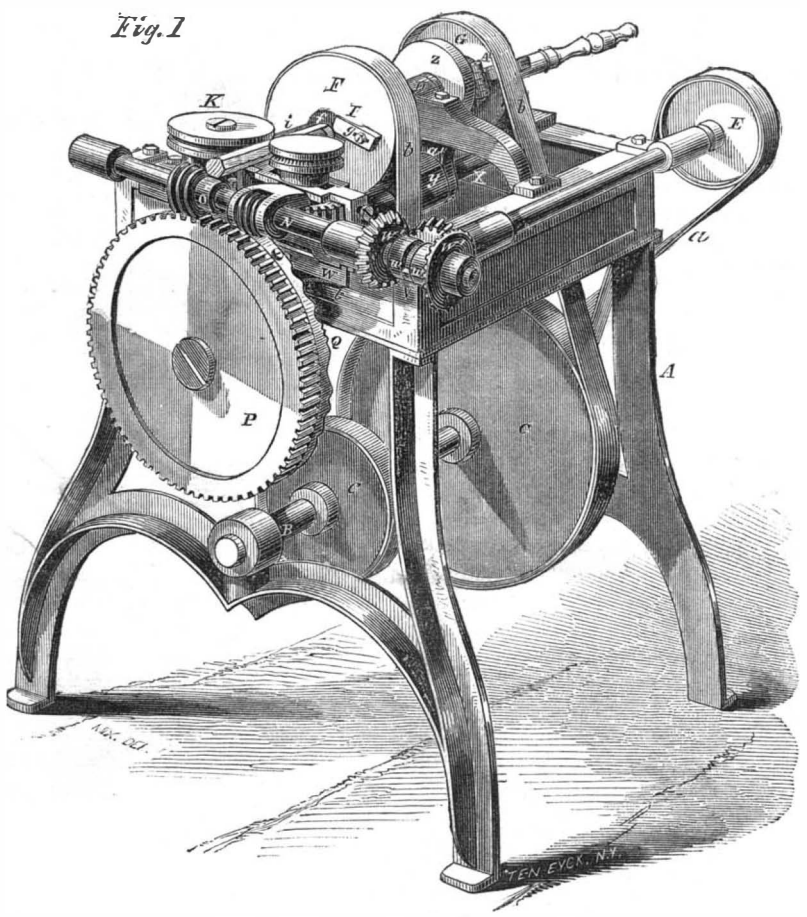
Motion is given to the shaft, B, and the disks, F G, by the belts, and likewise the cross-shaft, N, by the bevel gearing. The stick to be turned is forced between the wheel, J′, and guide, K, thence through the guide bar, *i*, into the hollow mandrel. Thegouge cutter, I, rotating on the disk, now takes off the rough and makes the stick perfectly round As the wheel, P, rotates, the pattern, Q, presses upon the end of the tracer bar, X, which slides back and forth as it is moved by the notches. This sliding motion moves the pendant, *a′*, with its collar, V, so as to press up or recede from the back end of the jointed lever, A′, to which the sliding plate, B′, of the ornamenting cutter, C′, is secured. This operation produces an expanding and contracting motion of the beading cutter, which is thus guided by the pattern, Q, through the tracer bar, X, to produce the pattern on the stick, as shown in Fig. 2.

The cutters rotate while the sticks are carried straight through. The clutch, *v*, on the front shaft, N, operates the gear-wheels so as to give a reverse motion to the shaft, N, and pattern wheel alternately. The clutch is shifted through the pins on the collar of the wheel, P, through the slide, R. The pattern wheel is thus operated to permit of the accurate and easy feeding of the sticks into the machine, and to save time by the continued operation of the pattern wheel back and forth. This lathe is automatic in its action, the sticks merely requiring to be fed into the disk, F.

The arrangement and combinations in this machine are ingenious, and as a whole, the lathe is easily managed, and produces excellent work.

The patent for this machine was granted August 4, and embraces three claims. More information may be obtained by addressing the patentee, Mr. Frederick Baldwin, formerly of Vermont, but now residing in Mendota, Ill.

Fig. 1



BALDWIN'S IMPROVED LATHE.

Fig. 2

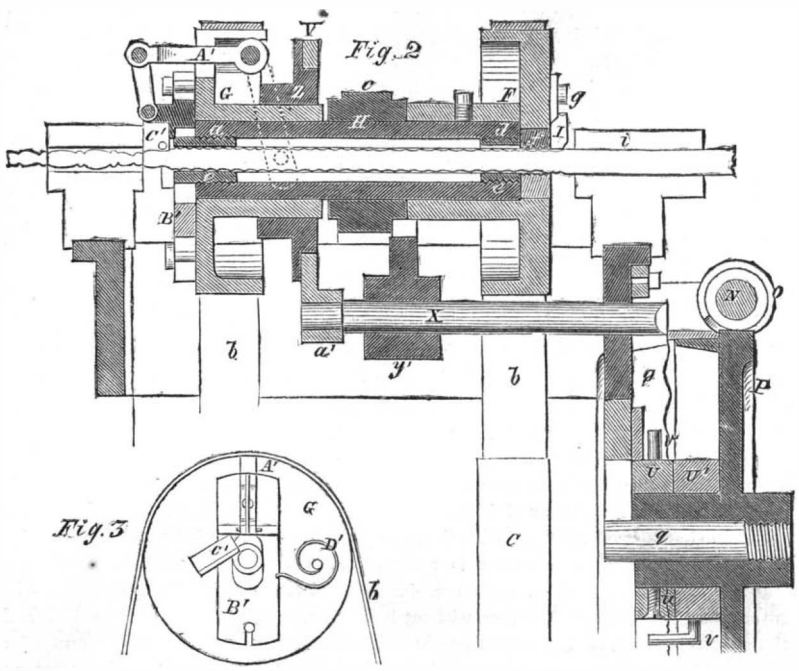


Fig. 3

NEW REMEDY FOR NEURALGIA.

The *Journal de Chemie Medicale* contains an account of the discovery of a new and powerful sedative in neuralgia, just discovered by Dr. Field. The substance used is nitrate of oxyd and glycile, and is obtained by treating glycerine at a low temperature with sulphuric or nitric acid. One drop mixed with 99 drops of spirits of wine, constitutes the first dilution. A case of neuralgia in an old lady, which had resisted every known remedy, was completely cured by this new agent.

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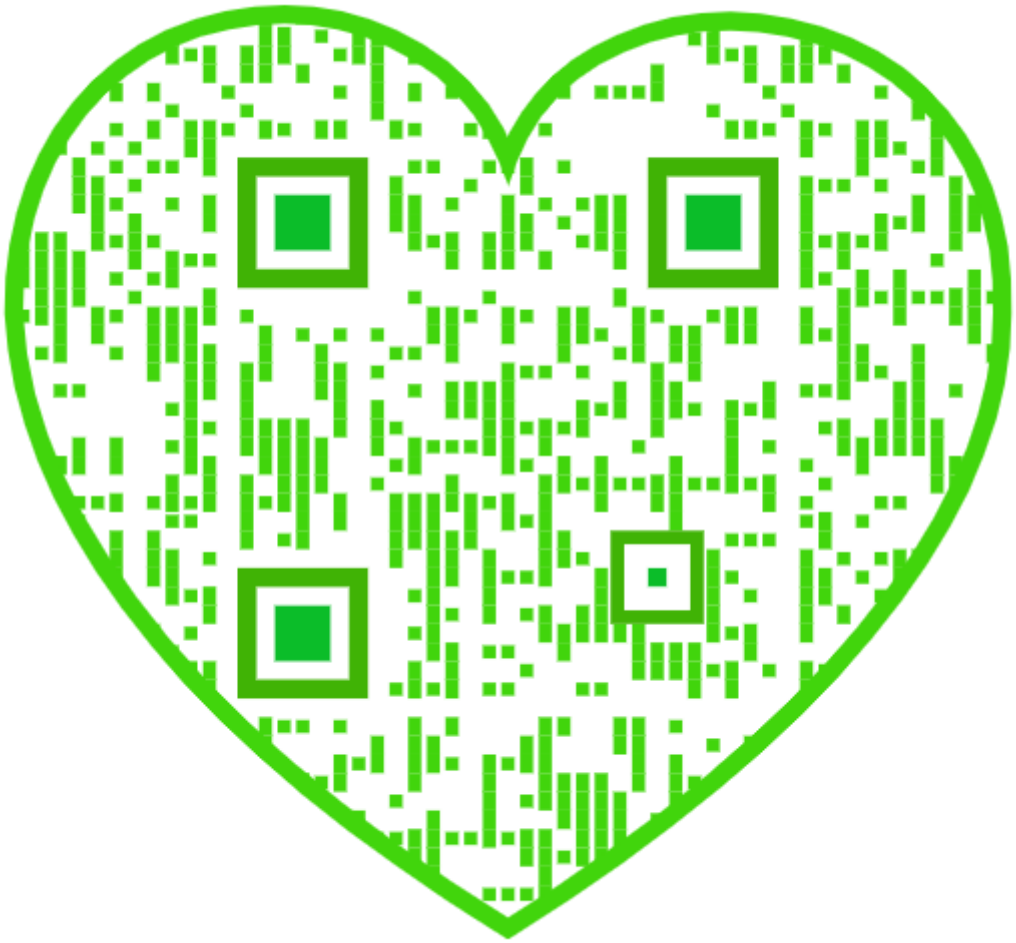

FACTS ABOUT COAL GAS.

A bill for regulating the sale of gas in Great Britain having been introduced into the House of Commons, the London *Journal of Gas-lighting* publishes the testimony of witnesses that have been examined by the committee of Parliament, in order to obtain correct information on the subject. We give, below, the substance of some of the testimony which was elicited.

A tun of Newcastle bituminous coal yields 9,200 cubic feet of gas; its price is sixteen shillings ($3.88) per tun. It is the practice in many English gas-works to mix one tun of Scotch cannel with every two of common coal. They thus obtain about 30,000 cubic feet of gas of a very superior illuminating power. The cannel coal costs £2 5s. (about $10.90) per tun in London. In that city, also in Manchester and several other large towns in England, the price of gas ranges from 3s. 9d. to 4s. 6d. per 1,000 cubic feet, the highest being but a little over $1; and yet the profits range from 9 to 10 per cent to the companies. Pure cannel coal gas of a high illuminating quality is only $1.25 per 1,000 cubic feet. The standard of illuminating power for gas made from cannel coal is that of 12 sperm candles for three cubic feet, and 20 candles for five cubic feet; that is to say, five cubic feet of this gas will give a light equal to that obtained from 20 sperm candles, and hence a "5-foot burner" is one which gives a light equal to 20 sperm candles; a "3-foot burner" gives a light equal to 12 candles. The main gas pipes in London are charged to a pressure of one inch; the pressure at the burners only amount to one half of this, and is subject to the control of the consumer. The pressure in the mains is generally greatest in the early part of the evening, and consumers frequently use more gas than they are aware of—some of it escapes unconsumed. The pressure of gas increases in pipes one-tenth of an inch for every 10 feet of elevation; at the top of a pipe at an elevation of 100 feet, the pressure is one inch greater than at the base. The pressure is determined by a gage used for the purpose. Gas generally contains ammonia, sulphureted hydrogen, and bi-sulphide of carbon. These impurities injure its illuminating qualities. The two former are capable of being removed with lime and sufficient washing, but the bi-sulphide of carbon remains incapable of removal by any of the ordinary means yet employed.

As the subject of gas-burners has recently formed the topic of considerable discussion at the meetings of the Polytechnic Association, in this city, we will state that a patent has been lately taken out in England (by A. L. Downie) for a burner which appears to be somewhat different in its construction from any described during those confabulations. The top of this burner is bell-shaped, and has a broad flange around it, through which holes are bored from beneath in such a manner as to conduct jets of air diagonally into and across the flame, which keep up a sufficient supply of warm oxygen and the flame is said to be very bright. This burner also contains a small recess, in which is a disk of perforated pasteboard and another of thin cotton cloth, stretched on rings, and so arranged as to form a chamber between them. The gas passes through this chamber to the orifice, and is diffused so as to flow steadily to the burner and prevent flickering. This method of stuffing the burner to diffuse the gas is simple, and the pasteboard and cotton cloth can easily be removed if they become clogged, and the renewal of them is a mere trifle of trouble and expense.

THE CARPET TRADE.

It is singular what a remarkable taste the American shows for a good carpet. It seems to be impossible for him to walk comfortably through life without a carpet under his feet. Every man who occupies a few square feet of house-room must have the brick or the boards protected from his tread by so much carpeting. Here carpeting appears in a thousand places where in other parts of the world it is never seen. The English shop-keeper thinks the bare boards good enough for the reception of his customers, and seldom does the merchant think of adding to the elegance of his counting-room by laying down a square of Brussels. Only those churches devoted to the service of the more aristocratic worshipers are furnished with the comforts of Kidderminister, the bare wood or bricks or stone being considered more consonant with the "self-denying duties of the sanctuary." Widely different is it with the well-to-do American. He believes in enjoying life; and considering that carpets contribute to life's enjoyment, he does not hesitate to spread everywhere he is accustomed to tread with a due quantity of three-ply, or Tapestry, or Brussels, or Turkey. Notwithstanding the high cost of foreign carpetings in this country, it is yet surprising to what an extent these are annually imported. In 1859, more than two million dollars' worth of carpetings was imported into the United States. Of that amount $2,174,064 was for goods of English manufacture, and $10,317 for French makes. Although a larger proportion of expensive carpetings is used in this country than perhaps in any other, yet it would appear that the kind most luxurious of all is sold to a very insignificant extent. The costly manufactures of Turkey are known throughout the world as at once the richest and the most durable of carpets; yet our entire importation of that make, during last year, amounted to only $798, which fact is probably owing to the limited extent of trade with Turkey. The sale of mattings is a branch of the carpet trade which is yearly increasing in importance. The imports of matting in 1859 amounted to $265,133; and this year in consequence of our growing trade with China, the chief source of supply, the receipts are likely to exceed considerably that amount. The imports of floor-cloth are comparatively trifling, our own manufacturer having succeeded in producing an article which has put foreign productions almost entirely out of the market.—*United States Economist.*

OUR SPECIAL CORRESPONDENCE

Sugar Plantations—Mode of Culture—Railroads and Alligators—Galveston—Extensive Drouth and Injury to the Crops—Mule-drivers, &c.

GALVESTON, Texas, May 31, 1860.

MESSRS. EDITORS:—A little before reaching New Orleans I came in sight of the first sugar plantations, and we passed through thousands of acres on the ride from New Orleans, 80 miles due west to Brashear, on the route to Galveston, Texas. The sugar cane in the present stage of its growth is simply a cluster of long sword-shaped leaves, looking very much like a lily. It is planted in rows, from five to seven feet apart, and some of the rows that we passed through were a mile and a half or two miles in length. The mode of planting is to open a furrow, any time in the winter, and lay two or three canes in it and cover them up. The canes for this purpose require to be preserved by protecting them from the cold, which is effected by covering them either with earth or, more commonly, with cane leaves. The plant, after being cut, throws up shoots, the second and third and sometimes even the fourth year, so that it is necessary to replant a fourth, a third, or a half of the plantation each year. The ground must be plowed and hoed sufficiently to keep it clear of weeds till the cane plants get large enough to shade the ground, three plowings being about the average. At about nine o'clock in the forenoon we passed a plantation in which the negroes were just taking out out the mules to water; having been plowing since daylight. There were some twenty of them, and the overseer was sitting on his horse, watching them as they rode off, perhaps a mile, to the well. The plantations are so large that the overseers generally ride, spending most of their time on horseback.

The railroad from New Orleans to Brashear passes through a very level country, a considerable portion of the way being a cypress swamp; and in the ditches by the side of the road we saw scores of young alligators, generally about five or six feet in length. Many of them were lying on the bank of the ditch, sunning themselves—slimy, scaly reptiles, as black as a negro, decidedly unattractive in their appearance. I am told that the female lays from two to three dozen of eggs, each as large as a turkey's egg and twice as long; that she covers them with sticks and leaves them to be hatched by the sun. It is only when disturbed in the neighborhood of her nest that the alligator is really dangerous. My informant says that on such occasions she is very ferocious, and will attack a man without hesitation.

The 180 miles from Brashear to Galveston we passed in the fine steamer *Orizaba* in about 21 hours, making the trip from New York, notwithstanding the 24 hours delay, in some 9 hours less than a week. Galveston is a new-looking place of brick buildings, many of them with beautiful iron fronts; it has a few shade trees in some of the streets. The yellow fever is the great scourge of the place.

There seems to be a general complaint of the drouth all the way from Maine to Texas. The corn, cotton and sugar crops are all suffering, and the latter especially is said to be in danger of failing entirely unless a rain comes soon.

My room-mate is an old Kentuckian who makes a business of buying horses and mules in Kentucky and Missouri and selling them in the southern States. He was quite uneasy on the steamship, as he had never been out of sight of land before. He said he didn't want to go where he couldn't *see timber*. A gentleman in the crowd, with a mole on the end of his nose, observed to him that, if that was the case, he had better take his hat and go ashore, as they would soon shove him into that fix. The weatherbeaten old frontiersman replied that he reckoned he could stand what any other man could. "Yes," said the gentleman, "Kentucky breeds that kind of men." Another rough customer from Alabama remarked that "he didn't know; he thought he couldn't stand being hen-pecked as some men are." "You oughten to say that," says Kentucky, "there was Delilah fooled Sampson, and he was the strongest man that ever was. No man ought to say that he can't be turkey-pecked." "No," responded the man with the mole on his nose, "there is no State that breeds that kind of men." B.

THE VENTILATION OF MINES—A NEW INVENTION FOR THE PURPOSE.

MESSRS. EDITORS:—I have carefully perused the communication of your correspondent, R. Allison, of Pottsville, Pa. on the subject of the ventilation of mines (published on page 370, Vol. II, of the SCIENTIFIC AMERICAN); and like him I believe that too much importance has hitherto been attached to warming ventilation. This theory was treated at length by David Boswell Reed, and published in London in 1844, and again in a work by the same author, (who now holds a prominent position in the Smithsonian Institute at Washington) in a book published by Wiley & Halsted in 1858. I think that it may be fairly stated that Mr. Reed has given this system of ventilation all that it is entitled to, and I concur with Mr. Allison in saying that it is full time that, for some of the most important purposes, it may be considered a failure.

When economy—the great *desideratum* for Americans—is taken into consideration, the "jet-of-steam" system will meet with no better fate. Your correspondent mentions a case where a gentleman began with 25 jets of steam, but subsequently increased them to 45. Each one of these jets passed through a nozzle $\frac{1}{8}$ of an inch in diameter, and at a pressure of 75 pounds on the steam gage. In a nozzle of $\frac{1}{8}$ of an inch in diameter and the steam at the above pressure, it may be fairly stated that 710 feet will pass through a nozzle of that size each second, or 42,600 feet per minute. Now multiply this by 45, which is the number of his jets, and you have 1,917,000 feet of steam passing through the aggregate number. When this is viewed from an economical point of view, it may unquestionably be said that this process is too expensive, to say nothing about its being ineffective.

I accidentally saw, some weeks ago, the particulars of an invention of R. W. Sievier, of London, England, which in my judgment is peculiarly adapted to the ventilation of mines, and which will when properly applied prevent any further loss of life to the miner. It consists of a simple exhaust fan working in a drum head, which is attached to a pipe, the whole being air-tight. This fan, when running at a speed of 1,000 revolutions per minute (and two-horse power if properly geared is sufficient to drive it at that speed), will exhaust 300,000 cubical feet of air per hour, through a pipe, shaft or flue, 15 inches in diameter. The construction of the fan is entirely different from any I have seen; and that it is capable of doing what is here stated for it is proved by the fact that one like it is now in operation in Newport, Ky., made by the same author. It is applied to what has heretofore been called a "blast furnace" for the manufacture of iron, and it exhausts a current of air through the furnace as shown by the monometer tube, equal to a blast through the ordinary tweers of 12 pounds to the square inch. If more exhaust is required, you have but to increase the speed of your fan, or if less, diminish the same. INQUIRER.

Jersey City, N. J., June 28, 1860.

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THE GREAT TORNADO IN THE FAR WEST.

[Written expressly for the Scientific American.]

MESSRS. EDITORS:—On the third day of June, 1860, between the hours of 5 and 7 o'clock P. M., a violent tornado—combining the forms of a landspout and whirlwind—passed through a portion of the States of Iowa and Illinois. For about 12 months preceding this occurrence, a remarkably small amount of rain had fallen in those sections visited by the tornado. The surface of the earth had become excessively dry and parched, although the temperature of the atmosphere had not been unusually high at any time. During the last 6 weeks preceding it, the extremes of heat and cold had been sudden and frequent—so much so, for the time of year, as to often excite remark. The mercury in the same sections, and during the last-mentioned period, had ranged between 60° and 90° Fah.; never below 56°. The day of its visitation was marked by no peculiarities. During the forenoon the sky was clear and the wind blowing gently from the East; as the day advanced, it became warmer; and from 2 to 3 o'clock P. M, the heat was at times oppressive. Between 4 and 5, there were strong indications of a heavy and continued rain—a few drops occasionally falling; and about 5, the wind suddenly changed to a stiff breeze from the South-east Thick black clouds now seemed to accumulate in the West and North-west, and, rising upward from the horizon, would encounter each other with a violent agitation. Sharp flashes of lightning, accompanied by rapid and heavy discharges of thunder, also became frequent. Each moment the motion of the clouds increased in rapidity, and, shooting athwart each other in all directions with renewed violence, filled with awe the mind of the beholder

The meteor originated about 80 miles west of the Mississippi river. A thin, somewhat elongated, cone was seen to descend toward the earth, said cone having an almost inky blackness, and (as first seen from a distance) it was about the dimensions of a man's arm. As it moved eastward, it increased rapidly in size and the well-defined proportions of an inverted cone became plainly visible, and (like the meteor described by M. Seltier as seen in France on June 18, 1839) "little clouds were fluttering and whirling round the cone, and rising and falling rapidly" Occasionally, small portions of its vertex became detached and fell to the earth; then new ones formed, and, ascending rapidly, attached themselves to the main body. It seemed to have both a gyratory and progressive motion, and as it passed over bodies of water, clouds (?) were drawn upward with great velocity. After a short interval it lost its cone-like proportions, the vertex dropped from the cloud, and, as it swept rapidly onward, assumed a snake-like shape, darting through the sky with the undulatory motion appertaining to that animal. At last it disappeared altogether, and in its place was a mass of violently agitated clouds drawn with extreme velocity to a common center. Its progressive motion averaged about 90 miles an hour. A low, roaring sound was first heard, augmenting as it approached; and those who were directly in its path, and yet escaped alive, assert that, as it passed, "Not a sound was heard; the stillness of death prevailed." This was probably owing to the fact that the sense of hearing was destroyed for the moment. It was preceded by no rain, but torrents of water seemed suspended within it, and deluging the earth as it struck, passed on, leaving in its wake a cold, clammy fog, rising slowly upward, which fog, attaching itself to the skin, gave the cuticle a livid and unearthly appearance, noticeable upon the countenance for several days afterward. A strong sulphurous odor was also, in many places, plainly perceptible. The violent rotary motion was seen in the circular lines of its ruins and in the position of small branches of trees which were wound round about the trunk.

A high wind from the North, accompanied by a drenching rain, almost immediately followed. In the progress of the meteor eastward, it rose and fell occasionally, and seemed to visit with greater destruction the highest points of land. As it swept onward in its course (within the narrow belt, from one-quarter to one-half a mile in width), everything animate or inanimate was doomed to certain destruction. Human beings fled to cellars and caves for safety. At many points, huge oaks were either uprooted or twisted from their foundations; other trees were often deprived of every leaf and limb—stripped of every vestige of root, bark and branch, and washed white and clean. Rails, boards and timbers were driven like spikes into the fields upon almost every square foot; excavations of earth formed in many places; in fact, all was laid waste as with some devastating torrent. The persons killed were enrolled in *rags*, perfectly saturated with mud, water and blood, and not recognizable until washed! The destruction seemed most complete near the town of DeWitt, in Iowa, where *whole families* were instantly killed, and their buildings and contents entirely destroyed!

The counter-current, an instant after the tornado passed, seemed almost as destructive. It threw the already shattered fragments into every conceivable shape and direction. The distance traversed by the tornado was nearly 140 miles, and it occupied about 1½ hours, in which time nearly 150 persons were killed and about 300 or 400 wounded. The night succeeding the storm was unusually calm and clear; the mercury fell 8° or 10°, and the full moon looked out silently upon the awful scene as upon some deserted battle-field. Altogether, it was one of those incidents which, once witnessed, can never be erased from the memory.

FRANK A. HOWIG.

DeWitt, Iowa, June 23, 1860.

[We are much obliged to our correspondent for his interesting and graphic account of the recent fearful tornado. It will be read with much interest by all.—EDS

AN IMPROVEMENT IN BAKING LIGHT BREAD.

MESSRS. EDITORS:—About twenty-five years ago, being aware of the fact that carbonate of ammonia is a volatile salt—both base and acid—I gave my wife a weak solution of that salt, and told her to make up a dough and bake light cakes with it, without any other thing to make it rise; and she did so. The cakes were light and good, without any smell of that salt, and ever since we have used it in our family to bake any sort of cakes—wheat, rye, buckwheat or corn-meal. In all these it is far superior to saleratus or super-carbonate of soda. It does not take one-half as much as any of those salts, it does not color the bread; and, as far as we have observed, it is not injurious to health But sometimes, when we had no carbonate of ammonia, and could not get it, we used saleratus, and latterly the super-carbonate of soda, both of which salts we found to be injurious to health, and they also color the bread, besides imparting a disagreeable taste to it. And furthermore, whenever a woman makes a batch of dough, and it happens to get sour and therefore will not rise, if the requisite quantity of carbonate of ammonia is added, it will revive it and make good bread. The objections to the general use of this salt are: first, if cake or bread is cut or broken open while yet too warm, it will be apt to liberate an ammoniacal smell; second, it is about three times as expensive as the super-carbonate of soda; third, its great volatility necessitates it to be kept in close vessels; fourth, there are few stores in the country that keep the article. In reference to the last objection, however, if the demand was increased, chemists would manufacture it with increased vigor, and hundreds of storekeepers would keep it. I suppose the super-carbonate of ammonia would be the best for baking. JOSEPH J. JODER.

Shanesville, Ohio, June 30, 1860.

AMERICAN NAVAL ARCHITECTURE.

[Reported expressly for the Scientific American.]

THE STEAMER "MASSACHUSETTS."

This fine steamer, erected in Boston by the Atlantic Works, will soon take her appropriate position on the route of her intended service—Boston to Charleston, S. C. All the modern improvements that experience has suggested in the construction of steamships have been advantageously used in the erection of this vessel, and it is confidently expected that she will prove a perfect success and an honor to her well-known builders. We herewith subjoin the particulars of her hull, &c.:—Length on deck, from fore-part of stem to after-part of stern post (above the spar deck), 210 feet; breadth of beam at midship sections above the main wales (molded), 35 feet; depth of hold, 17 feet; depth of hold to spar deck, 25 feet; draft of water at load line, 13 feet 8 inches; tunnage, 1,150 tuns.

Her hull is of wrought iron plates, from ½ to ¾ of an inch in thickness, and very securely fastened with rivets ¾ of an inch in diameter, every 2, 2½ and 2¾ inches. There are 5 fore-and-aft vertical keelsons, of 17 inches in depth, all tapped with angle iron. The floors are shaped Z L, and are molded 4½ inches, sided ½ of an inch; distance of frames apart at center, 18 inches.

The *Massachusetts* is fitted with one vertical direct-condensing engine; number of cylinders, 1; diameter, 64 inches; length of stroke of piston, 3 feet 8 inches; material of propeller, cast iron; number of blades, 4.

She is also supplied with one horizontal tubular boiler, located in hold, and possessing a water bottom. Shape of keel, I; dimensions, 9 by 3 inches; water-ways are of white pine—24 inches by 14 inches. Blowers are not used to furnaces. She has one smoke pipe, one independent steam fire and bilge pump, one bilge injection, and bottom valves or cocks to all openings in her bottom Her bunkers are of iron; she has two large anchors and four water-tight athwartship bulkheads; there are two cargo ports on main deck.

Her rig is that of a brigantine. In addition to these features, she is amply protected from communicating fire from the boiler by felt, zinc, tin and sheet iron.

This steamer is owned by the Boston and Southern Steamship Company

THE PROPELLER "KILANEA."

As this steamer has been recently erected for parties in other countries, we think it not inappropriate that the essential elements of its construction should have a place in the columns of the SCIENTIFIC AMERICAN, and so proceed to give them in detail, as follows:—Length on hurricane deck, 140 feet 8 inches; length on lower deck, 133 feet 6 inches; breadth of beam at midship section, above the main wales (molded), 24 feet 11 inches; depth of hold, 10 feet; depth of hold to spar or hurricane deck, 16 feet 6 inches; draft of water at load line, 9 feet 10 inches; tunnage, measured as a single-decker, 315 tuns, but, more properly, as a double-decker, gives 398 tuns, her correct measurement.

Her hull is of white oak, with hacmetac top timbers cross-fastened with iron, and with tree-nails in outboard driven through ceiling; butts fastened with yellow metal and copper, butt bolts and large spikes. Distance of frames apart at centers, 30 inches, and these are diagonally strapped with iron 3½ by ⅜ inches. The floors are molded 13 inches; sided 12 inches to 14 inches.

The *Kilanea* is fitted with two direct-acting vertical engines, number of cylinders, 2, diameter of same, 26 inches; length of stroke of piston, 3 feet; diameter of propeller, 9 feet; material, of "composition;" number of blades, 3; extreme width of same, 5 feet 6 inches, acting direct; their pitch, 21 and 23 feet; and length, 3 feet 6 inches.

She is also supplied with one single return flue boiler, located in hold, forward of the engine; length of boiler, 28 feet; breadth of same, 7 feet 9 inches, and its hight (exclusive of steam chimney) is 8 feet 10 inches; number of furnaces, 2; breadth of these, 6 feet 8 inches; length of fire-bars, 6 feet 3 inches; number of flues above, 4, number of same below, 10; internal diameter of those above, 18 inches, and the internal diameter of those below, 8 of 10½ inches and 2 of 18 inches; length of flues above (extreme), 22 feet 8 inches, length below, 15 feet 11 inches; possesses 1 smoke pipe; diameter 3 feet 3 inches; boiler has water bottom; no blowers to furnaces, and no slip joint to steam pipe.

Ample protection has been made against communication from fire by the boiler, in the shape of felt, canvas, paint, &c., &c; the protection in the chimney-room from the smoke pipe is by iron casing. Maximum pressure of steam, 25 lbs.; point of cutting off (variable), ordinarily at ¼ stroke; maximum revolutions at this pressure, 55; and speed of vessel, in knots, 10 nautical miles.

She has one independent bilge pump, two bilge injections and bottom valves or cocks to all openings in her bottom; bunkers are of iron; water-ways of yellow pine; has two masts, and rig similar to an hermaphrodite brig; anchors are three in number; respective weights, 524, 1,120 and 1,487 lbs.; total weight of the three, 3,131 pounds.

The hull was constructed by Mr. Paul Curtis; the machinery by the Atlantic Works, East Boston, Mass. The location of her intended service is around the Sandwich Islands.

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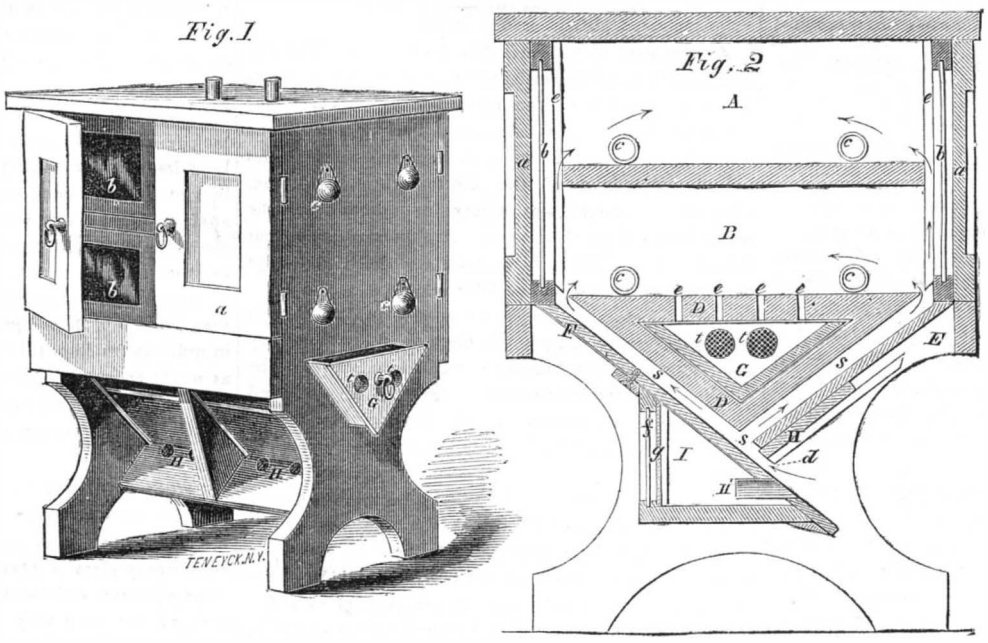
PATENT BEEHIVE.

"The little busy bee"—emblem of provident frugality—has many enemies which seek to prey upon the fruit of its untiring industry. Those, therefore, who cultivate bees seek to protect the little denizens of their hives from insect robbers and moths, and various devices and conformations of hives have been devised for this purpose. The accompanying engravings represent a perspective (Fig. 1) and a section (Fig. 2) view of an improved construction of hive-trap for catching drone and robber bees and the "miller moth," for which a patent was granted to R. Hawkins on the 24th of April last.



HAWKINS' PATENT BEEHIVE.

The hive is made with two apartments, A B, and with doors, *a a*, at its back and front; *b b* are removable glass panels between the doors and the working chambers, for the purpose of inspecting the bees and for the removal of honey. At one side, leading into each chamber, are long tubes, *c c*, which are provided with a removable stopper. These tubes are opened at their plugged ends, whenever it is desirable to have the bees pass through them from the hive. By employing long tubes for these passages, the bees will not cluster on the sides in the same manner as in hives having only holes cut in their sides. The bottom, D, of the lower chamber of the hive is made of a V-shape in its transverse direction, and is suspended from the end boards of the casing, E, in a V-shaped extension, F, so that an ingress passage, S, for the bees exists between it and the extension from one end of the casing to the other, as represented. This passage communicates with the long narrow opening, *d*, at the lower part of one of the inclined sides of the V-shaped extension, F. By thus constructing the bottom of the lower chamber, the lower V-space below the point where the bees begin to work can be nearly filled up, and a free passage is also secured for the bees at both the side edges of the bottom after they have entered at the opening, *d*. It is very important thus to fill up the V-space; because, if it is left open, the bees are exposed to cold air in inclement weather, and in order to keep warm, they seek a place at the top of the hive, and, as a consequence, the lower portion of the comb in the lower chamber is left exposed to the enemies of the bee, and the moth soon finds access for evil. By having openings only at the side edges of the bottom, D, and center of the V-shaped extension, F, the bees will be merely subjected to air at the side edges of the bottom, D, and will not be compelled to retreat from the lower to the upper chamber in order to keep themselves sufficiently warm in cold weather. By this arrangement, therefore, they will always be in a position to meet intruders and defend themselves from all enemies which may seek to enter at the bottom of the lower chamber.

To permit of feeding the bees in cold weather, the V-shaped bottom is made hollow, and a drawer, G, of suitable form, slides into this space, through an opening in one end of the casing. The passages, *e e*, are for the bees to pass down into the feed drawer, G, which has ventilating openings, *t*, covered with wire gauze. A cut-off strip, H, is arranged at the egress passage, *d*, for confining the bees when required. A series of tubes, H′ H′, are arranged below this passage, and in rear of these is a triangular chamber, I, for entrapping millers, drones and robber bees. There is a grating, *f*, and a plate of glass, *g*, in front of this trap, and by removing the glass, it may be used at all times as a drone trap without danger of imprisoning the working bees. By replacing the glass, it may be used at certain periods for catching robber bees and the millers. At those seasons when the miller and robber bee hover round the hive, the glass plate, *g*, is placed in front of the grating; and if it is desired to catch robber bees, the cut-off strip, H, is lowered for a short period of time, when they will pass into the trap, I, and may be destroyed. The miller is caught in the same manner, and is thus prevented from depositing its eggs, where they would be vitalized, and in due season destroy the honey. The cut-off strip, H, is raised sufficiently high to admit the working bees but not the drones. The working bees enter the opening, *d*, and run into the working chamber by the passage, S; the drone bees, not being able to enter the passage, *d*, pass through the tubes, H′, of the trap, I, in seeking an entrance into the hive. The grate bars of the trap are set at such a distance apart that, if a working bee should find entrance into the trap, it may escape through the grate, the glass, *g*, being removed; but the drones, being larger, cannot escape by the grates, and are therefore caught.

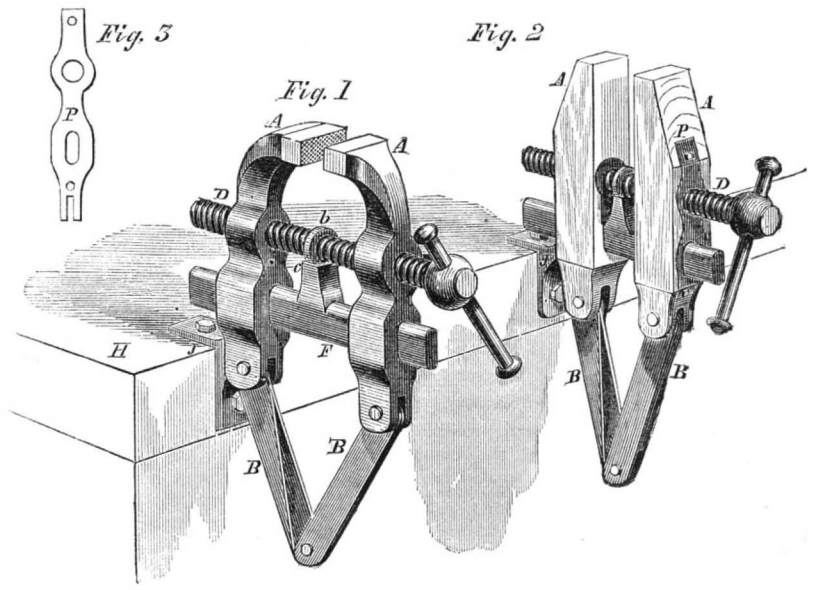
More information may be obtained by addressing the inventor, Robert Hawkins, at Beallsville, Pa.

NEW THEORY OF OZONE.—M. Schoenbein has found that there are two species of ozone—the one electro-positive, the other electro-negative—both of which exercise a very energetic chemical action.

IMPROVED BENCH VISE.

It is essential to the favorable action of a vise that its jaws should move parallel, and to effect this object in a simple manner, and at the same time provide a vise suitable for workers in both metal and wood, has been a desirable object. The accompanying figures represent an improved vise embracing such qualities, for which a patent was issued on the 24th of April last.

Fig. 1 is a perspective view of the improved vise for workers in iron, Fig. 2 is a view of a vise with wooden jaws, adapted for joiners and workers in wood, and Fig. 3 is a face view of a metal plate applied at the back of the wooden jaws, and through which the screw and parallel guide bar pass. A A are the jaws of the vise, which are pivoted to two arms, B B, which are also pivoted together at their lower ends. These four parts are made of suitable material and work freely on their joints. D is a right and left screw shaft passing through each jaw, and having a handle for turning it to open and close the jaws. At the middle of the screw shaft is a small ring wheel, *b*, which turns in a grooved projection, *c*, on the parallel guide bar, F, and keeps the latter in place. A recess is made in the inside of the jaws to receive the wheel or ring, *b*, and the projection, *c*, to permit the jaws to close. The two vises are represented as secured on a bench by a fastening plate, J, screwed down in a proper manner The object of the guide bar, F, is to keep the jaws always parallel, and when they are screwed upon an article, it prevents them from drawing on the screws and injuring the thread. As a consequence, the strain on the jaws is rendered more equal and they can be driven up with more ease. A parallel and powerful wrench may be obtained by inverting the parallel bar and placing it above the screw, D.



BEARDSLEY'S IMPROVED BENCH VISE.

It is seldom the case that an improvement is applicable to so many purposes, like this one; it being adapted, as in Fig. 1, for the iron vise of a machine-shop, and as in Fig. 2, for cabinet-makers, wheelwrights, carpenters and joiners. The vise may be entirely of cast iron, or partly of cast and wrought; and the jaws have suitable provision made to attach to the jaws strips of leather, so as to obviate the marking of articles that may be secured in them.

More information may be obtained by applying to the patentee, Levi A. Beardsley, South Edmeston, N. Y., or S. A. Heath & Co., No. 102 William-street, this city, where one of the implements may be seen.

BUSSON'S NEW PROPELLER FOR STEAMBOATS.—A French inventor, M. Busson, has lately exhibited a working model of his boats on one of the ponds in in Paris, and it has received elaborate praises from our Paris cotemporaries. It consists of a conical screw turbine on a vertical shaft, placed in front of the boat, to suck in the resisting water, and thus form a partial vacuum at the bow, while the discharging water at the sides re-acts to propel the boat forwards. Such a propeller appears to us to be altogether unsuited for such a purpose. It embraces the same principle of action as the water pump system of Rumsey, and is not so simple nor effectual as the screw applied to act directly at the stern upon the water. A turbine propeller is also liable to become choked with sea-weed, &c.

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Scientific American.

MUNN & COMPANY, Editors and Proprictors.

PUBLISHED WEEKLY

At No. 37 Park-row (Park Building), New York.

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

Single copies of the paper are on sale at the office of publication, and at all the periodical stores in the United States and Canada.

Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

☞ See Prospectus on last page. No Traveling Agents employed.

VOL. III., No. 2.....[NEW SERIES.]....*Fifteenth Year.*

NEW YORK, SATURDAY, JULY 7, 1860.

A CONTINENTAL RAILROAD—THE JAPAN AND CHINA TRADE.

IF the plain question were asked—"For what purpose have we provided national vessels to carry a few semi-barbarous Japanese chiefs across the ocean, and made feasts and processions for them at such a vast expense?" it would, perhaps, not be difficult for most persons to return a definite answer. The people, however, have formed some kind of a notion respecting the nature of these demonstrations, and if this notion is not correct, these pageants and expenditures must be set down as contemptible absurdities. The feeling in the public mind is that, as a piece of policy, our government officials have done all these things to astonish the Orientals, and overpower them with a sense of our greatness and generosity, in order to break down their long-established exclusiveness, so that a profitable trade may be established between the ports of Japan and those of our Pacific States. These objects deserve praise, whether the means sought to attain them will ultimately be successful or not. A more lofty scheme than this—yet embracing this one in its folds—had been previously presented to our people. This was the grand Pacific Railroad of Whitney, which was the topic of general discussion about 15 years ago. It involved the idea of making our continent the "half-way house" between the East Indies, China, Japan and England. It was intended to construct this railroad from the Atlantic Ocean to the Pacific; and all Asiatic products designed for European markets, as well as articles of European merchandise for Asiatic consumption, were to pass through the whole breadth of our country; thus making the United States the grand *caravanserai* of nations. The project was really sublime and plausible, and some day it may be executed; but what we wish particularly to direct public attention to, at present, is the utter want of *system* in our present railroad system for the consummation of such a laudibly ambitious project.

Supposing that a railroad were completed in a few years hence from California to St. Louis, as many expect, it would be unsuitable for an international carrying trade, owing to the frequent loading and unloading of freight to accommodate the cars of the different lines. In New York, the general rail gage is 4 feet 8½ inches, with the exception of the Erie Railroad; it is the same in New Jersey, Pennsylvania, Maryland, Kentucky, Illinois and Indiana; but the Ohio gage is 4 feet 10 inches, and the Pacific line west of the Mississippi is the broad gage. With particular cars having broad wheels, freight is sometimes run direct from New York to St. Louis; but what we want is a *continental trunk line*, of a uniform gage, from the Atlantic to the Pacific. We are no admirers of the 4-foot 8½-inch gage; but as it is the most general, we think Ohio should endeavor to contract her rails, and we advise the people of Missouri to come to the same rational conclusion. As a railroad will be carried to the Pacific some day not very far off, it is certainly desirable that it may form one entire system from ocean to ocean, in order that we may be able to take advantage of our growing trade between China and Japan. It is wise to concert measures for further contingencies, so as to be prepared for all exigencies—favorable or unfavorable. At the North, our Canadian neighbors have already laid the foundation of a great Atlantic and Pacific Railroad. The Grand Trunk Railroad has a gage of 5 feet 6 inches, and is now 1,100 miles in length. The intention is to carry it forward to the Pacific, and make Canada, instead of the United States, the public highway of the nations—the "half-way house" between China and Europe. It thus appears that the great design of a national continental railroad, which was first proposed by an American, is in a fair way of being appropriated successfully by the Canadians; and unless our people awaken to a true sense of their interests, the benefits of the *fetes* which we have given to "John Japan" may yet travel in a direction straight for Uncle John Bull.

THE LOST ARTS.

A great deal of nonsense has been uttered by sensation lecturers and magazine writers about wonderful arts which perished with the ancients. To trust in the lamentations of these wiseacres over the "lost arts," one would think we had fallen upon very degenerate times indeed. But none of the doleful stories are true. Cleopatra, no doubt, was a very fine woman; but she never dissolved pearls in wine. Archimedes was a great man in his day, but he never set fire to the Roman ships with burning glasses as the fable relates.

The ancients had no useful arts which we do not understand better and practice more skillfully than they did. The humblest American mechanic could teach the polished Greek and the cunning Egyptian sciences and arts of which they never dreamed. The ancients, indeed, did many wonderful things which have not been since repeated; but they were only such things as are not worth doing over again. If we had occasion to build such a foolish thing as a pyramid, we would improve on our model in every respect; and instead of keeping a hundred thousand half-starved slaves at the work for twenty years, we would turn it out finished in a few months. George Law and a hundred others would be willing to take the contract at a day's notice.

If any people, now-a-days, lived in a condition like the ancients, they would be objects for sincere pity, and it would be our duty speedily to send missionaries among them. What a lamentable sight would be a nation of great mental vigor, half-clothed and poorly fed, tilling the earth with wooden plows; without soap, pins, friction matches or india-rubber! How queenly would one of our factory girls appear to them! How magical the art of a Yankee clockmaker! Beggars, now-a-days, with regard to the substantial comforts of life, fare better than ancient kings.

Our modern civilization is surely just what is suited for the welfare of humanity. The steam engine, politics, electricity, morality, and every good thing move on together harmoniously. We look back into the Past, to note, as warnings, the paths of error which our predecessors trod, and we push on cheerfully and confidently, feeling that the Present and the Future are of the utmost importance to us.

WHAT IS LAGER BIER?

There are thousands of people in New York who seem to have quite forgotten the use of plain water as a beverage. In certain quarters of the city "lager" is the main staple of life, being for sale in almost every house, and the drink, and even the food, of all the men, women and children. There is no single article of manufacture and sale which employs so many people and requires so much space. There are at least five thousand places in the city where you may buy a glass of lager, and many of these places accommodate their customers by thousands. At the Volk's Garten, for example, on a warm Sunday night, enough lager is carried away in capacious stomachs to float a navy. The flow of lager is incessant—the voices which call for lager are never still—lager is king!

Lager is one of our most most modern institutions. Ten years ago it was only a vulgar German word of unknown import; then it was looked upon as an insipid Dutch beer; but finally, a majority, perhaps, will vote that it is "the people's nectar." Lager has defenders, now, among all classes; they say it is not intoxicating, and that it contains a great deal of nourishment. An examination of the method of manufacture of lager and its composition will clearly show what foundation there is for the virtues claimed.

Beer and ale are the fermented extracts of malt, hops being added to give an agreeable flavor. Malt is steeped and boiled in water, and the infusion or solution is then fermented by the addition of yeast. The specific differences of the various beers and ales is due to the methods of making the malt and conducting the fermentation. The peculiarity of the lager bier process is that the fermentation is conducted at a very low temperature, and continued for a very long time. The chemical change in the fermentation consists in the decomposition of the malt extract into carbonic acid gas and alcohol; the malt extract disappears and alcohol takes its place. The longer the fermentation continues the less will the beer be nourishing as food, and the more intoxicating it will be as drink. By the conversion of grain into beer its nutritive substance is mostly lost, being changed into alcohol and gas. Grain extract—even in the best shape, as gruel or porridge—is not the most fit food for a healthy man; and to claim that beer is nourishing from its homeopathic dose of malt extract is ridiculons. Lager bier, on account of the long continued fermentation, contains less nutritive matter and more alcohol than other beer or ale. A comparison of about twenty chemical analyses of lager and other beer show that, in lager, the alcohol is always in excess over the malt extract, while in other beer the excess is in favor of the malt extract. In lager the malt extract does not reach five per cent, so that one would be obliged to drink two or three gallons in order to get from this villainous food such an amount as would be required if taken in a civilized way. Ale often contains a larger per-centage of alcohol than lager, but the malt extract is still in excess unless the al be very old.

Certain witnesses have testified and courts ave decided that lager is *not* intoxicating; but in view of the fact that a pint of lager contains as much alcohol as an ordinary glass of brandy, it might be suspected that those witnesses and courts had been indulging in lager just at the time they needed their sober judgment. Finally, it is claimed that lager is a pleasant bitter tonic, stomachic, anti-dyspeptic, &c. But healthy men need no medicine; and a friend of ours, who prides himself on being an American, suggests that lager is *too-tonic*.

AN EXPENSIVE LUXURY.

The municipal authorities of this city appropriated $30,000 to entertain the Japanese during their stay in New York. The ambassadors and their attendants have princely quarters provided them at the Metropolitan Hotel, and are enjoying "all the luxuries of the season" at the expense of the tax-payers. It is estimated that the hotel bill alone will reach the snug sum of $65,000, and, in all probability, before we get fairly rid of these Orientals, the bills will foot up against the city to nearly $100,000. The committee have "gone it with a perfect looseness," and will make their helpless constituency smart under their extravagance.

It is quite probable that the Japanese Ball (which came off on Monday evening, the 25th ult.) will very nearly engulph $25,000 out of the original appropriation. It was undoubtedly the greatest affair of the kind that ever occurred on this continent; the guests actually numbering from 10,000 to 12,000—male and female; and if the proprieters of the hotel do not make more money out of the affair than the merchants of New York will out of the commerce which will occur between the two countries for 10 years to come, then we shall be most happily disappointed.

The Japanese are a shrewd people, and will no doubt return home only to laugh heartily at our foolishness. Verily, we are a set of asses. Kossuth found out this fact sometime ago, and the Japanese have just discovered the same "auricular extension."

All that is now necessary to "cap the climax" of this ridiculous tomfoolery is to get the Common Council (the commonest in the known world) to seduce his Royal Highness, the Prince of Wales, to make us a visit, and Tal Shaffner to lay a cable from Siberia to Greenland.

APPLICATION FOR THE EXTENSION OF A PATENT.

Double-seaming Machine for working Sheet Metal.—George B. Moore, of Mt. Pleasant, Pa., has applied for the extension of a patent granted to him on the 19th of September, 1846, for an improvement in the above-named class of inventions. The testimony will close on the 20th of August next; and the petition will be heard at the Patent Office on the 3d of September.

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POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

[Reported expressly for the Scientific American.]

On Thursday evening, June 21st, the usual weekly meeting of the Polytechnic Association was held at its room in the Cooper Institute, this city; Professor Mason presiding.

MISCELLANEOUS BUSINESS.

Granulated Cork.—Mr. S. W. Smith, of this city, exhibited samples of granulated cork intended as a non-conducting packing for refrigerators. The granulated cork is made of the refuse, by a recently-patented cork-cutting machine. The refuse parings and imperfect pieces of wood are put through a mill which chips them up to about the fineness of very coarse sawdust. The granulated cork is especially recommended as packing under sheet metal roofs, to keep out the sun heat. Its value has been tested for that purpose, and as a lining for refrigerators and water-coolers. The advantages claimed for it over other substances applied to similar use are that it is not subject to dry-rot or other decomposition, that it is light, easy to handle, does not absorb moisture and is cheap. Mr. Smith sells it for 50 cents per barrel.

The president remarked that this substance promised to be of utility in the lining of refrigerator cars. Heretofore, sawdust and charcoal had been used. At present, charcoal is preferred, and a few cars have been lined, at a considerable expense, with slabs of cork closely laid together, but the granulated cork seems to be preferable to either. Refrigerator cars have been found practicable, and will come into extensive use, and anything which promises an improvement for them is worthy of serious attention.

The Re-organization.—A communication was received from the Committee of Arts and Sciences, establishing the re-organization of the Club, as agreed upon last week. The new order of things will be probably put in operation at the next meeting.

Artificial Leather.—Mr. Penniman presented samples of artificial leather or leather-paper, manufactured at North Amherst, Mass. The basis of this leather is the scrapings of curriers, and waste pieces of leather. This material is treated in a paper mill precisely like rags, being reduced to a pulp and formed into sheets. The artificial leather, of course, has not the strength of genuine leather, but in other respects it appears about the same, and may be used as a substitute for leather when no great strength is required. It is especially recommended for the lining of the soles of shoes, cap fronts and dashers for carriages.

Mr. Johnson—Mr. Cooper uses a great deal of waste leather for the manufacture of glue. Glue or gelatine is the chief constituent of leather.

The President—Prussia requires that her soldiers shall return to the government their old shoes, before they can have new ones.

Mr. Butler—This is the reason that prussiate of potash is manufactured so extensively in Prussia.

The artificial leather seemed to meet the approval of the meeting.

The president here announced the regular subject—"The Cut-offs of Steam Engines."

DISCUSSION.

Mr. Stetson opened the discussion with remarks on the importance of the subject. Nearly all of the ten thousand steam engines in and about the city of New York are provided with cut-offs, and engineers and owners of engines generally approve their use. But the exact gain or loss (as some contend) by cut-offs is not clearly understood. If they are useless, we must examine the subject so as to find it out.

Mr. Rowell—Mr. Isherwood, the author of "Engineering Precedents," has examined the details of the experiments recently made at the Metropolitan Mills, and fully endorses our conclusion that there is no advantage in the use of the cut-off. Mr. Isherwood has examined the subject of cut-offs with great care, and his convictions are positive against their use.

Professor Hedrick—In the cylinder without the cut-off, the force of the steam is nearly constant to the end of the stroke; not absolutely constant, for the reason that the piston is moving away from the stroke. When the cut-off is used, the force gradually diminishes, so that if the tension is low and the cut-off short, the force exerted at the end of the stroke is nothing, or is in the contrary direction. If the resistance to be overcome or the work to be done is unvarying, the force employed should be constant. There is, however, a clear theoretical gain in the use of the cut-off, and I shall be able to present it at another meeting.

Mr. Garvey—In the discussion of this subject the difference between dry and wet steam must be kept in view. If cut-offs are of use, it can only be in the case of dry steam.

The Association then adjourned to 8 o'clock P. M., of the 28th.

WATER WHEEL EXPERIMENTS.

We publish the following from the report (just received) of Chief-engineer H. P. M. Birkenbine, to the Select Council of the city of Philadelphia:—

GENTLEMEN:—In answer to your resolution of May 31, 1860, the department would submit the following general report upon the experiments made with turbine wheels at Fairmount Works:—

The experiments were made in obedience to a resolution of the Committee on Water, and by an appropriation of $500 made by councils. An advertisement was inserted in the SCIENTIFIC AMERICAN, calling attention to these experiments. If a detailed report is thought desirable by your honorable body, an appropriation of $350 will be necessary to print it in pamphlet form, with the necessary diagrams and tables to make it fully intelligible and useful.

An experimental apparatus was constructed at Fairmount Works, for the purpose of testing such turbine water wheels as might be presented. The department entered reluctantly into these experiments. First, for the want of time to conduct the investigations with the care and detail which their importance demands; second, on account of the limited appropriation made to carry them out; third, the delay consequent upon the experiments in completing the plans and details of the works, and also the difficulty felt in making deductions from model experiments which would guide us in the selection of wheels of the great power required for these works. So far, however, as these experiments have been prosecuted, they have been carefully done. The tests were made simply for the purpose of ascertaining what proportion of the power employed would be utilized by the different wheels or their co-efficient of useful effect. The wheels were tested under a head and fall of 6 feet, and weights of from 500 to 1,600 pounds were raised from 14 to 25 feet.

Nineteen different wheels were tested, and 122 different experiments made with them. Several of the wheels were removed without submitting them to a public test; of these no accounts have been kept. The accompanying table exhibits the best results obtained from some of the wheels:—

Names.	Weight raised in pounds.	Hight raised, in feet.	Cubic feet of water discharged.	Head, in feet.	Time, in seconds.	Ratio.	Date of trial.
Monroe & Bartlett, Worcester, Mass	850	25	105.72058	6	39	.8369	Oct'r. 7, 1859.
Reuben Rich, Salmon River, N. Y.....	750	25	80.19686	6.1	33	.6133	" 20, 1859.
J. Littlepage, Austin, Texas.....	1600	14	109.384	6.05	25	.5415	Nov. 22, 1859.
J. Tyler, West Lebanon, N. H.....	925	25	77.21516	6	25.5	.7123	Dec. 19, 1859.
N. R. Merchant, Guilford, N. Y.....	1100	25	114.356	6	33	.6413	Jan. 12, 1860.
L. W. Blake, East Pepperell, Mass.....	995	25	86.0156	6	28.3	.7109	" 20, 1860.
Collins, Haydock & Wildman, Troy, N. Y....	900	25	78.209	6	27.6	.7669	Feb. 9, 1860.
L. Smith, Reading, Pa.....	1300	22	110.75758	6	20.3	.7569	" 21, 1860.
E. Geryelin, Philadelphia, Pa.....	1000	25	81.19275	6	26	.8210	" 29, 1860.
J. F. Stevenson, Patterson, N. J.....	925	25	70.25486	6	23.6	.8777	March 9, 1860.
A. P. Mason, Buffalo, N. Y.....	750	25	59.0548	6	27.6	.6294	" 16, 1860.
Andrews & Kallbach, Berrville, Pa.....	700	25	58.9294	6	18.6	.8197	" 23, 1860.

Mathematical accuracy was not aimed at, but the experiments may be relied upon as practically correct. The apparatus was of the most simple character, and the arrangements such that no mathematical formula was required to ascertain the amount of water used or result produced; but they were actually weighed and measured.

It was necessary to refuse to test a number of the wheels, as the appropriation was all exhausted and the completion of the plans for the wheels could be no longer delayed, and the department was so fully occupied with the extension of the works that time could not be found to pay them the proper attention.

Valuable assistance was rendered in these experiments by the chairman of the Water Committee, O. H. P. Parker, Esq., James Millholland, of Reading, Wm. B. Bement and Charles S. Close, of this city. Among the wheels which produced the best results, and to the makers of which certificates have been given, as shown in the accompanying table, the highest co-efficients of useful results were produced by the Jonval wheels made by J. E. Stevenson, of Paterson, N. J., and E. Geyelin, of this city, and a modification of the Parker wheel, made and patented by Andrews & Kallbach, of Bernville, in this State. The majority of the wheels worked very satisfactory, and the makers of them were mechanics of more than ordinary ability. It is believed that no country could produce, from the same number of wheels promiscuously collected, so satisfactory a series of experiments.

The best result was procured from the Jonval wheel made by J. E. Stevenson, of Paterson, N. J., which gave an actual useful effect of the power employed of nearly 91 per cent. The wheel of Andrews & Kallbach, of Pennsylvania, is remarkable for its simplicity; and, had it been constructed with the same amount of care and finish as that of some of the others, it is believed that the co-efficient of useful effect would not have been surpassed by any. Two of these wheels placed upon a horizontal shaft might make a most desirable arrangement for our new works; but the department is not prepared to recommend their adoption, as it might involve a risk of a failure, and we are adverse to making any experiment at so great an expense and loss of time which might result to the city. We have been unable to find any wheels now in operation of the aggregate power that we will require, or arranged in the above manner, or under similar circumstances to our requirements.

The department, therefore, see no reason to change the plan of the works, and will adopt the Jonval turbine, arranged and geared similar to the one now in use at Fairmount.

In coming to the above decision, and recommending the Jonval wheel, the department has been influenced by the following considerations:—

First, They have always been esteemed among the most efficient wheels, and, although other forms of wheels have been removed to give place to Jonval turbines, the department does not know an instance where the turbine wheel has been taken out to introduce another form of wheel. Our experiments upon the turbines have also proved them the most effective, giving the highest co-efficient of useful effect.

Second, They are the best adapted to our particular situation, on account of the comparatively small fall at Fairmount and the large amount of power required for each wheel (a mean of 125-horse power), and the low velocity they run as compared with other turbines, making less reduction of the speed necessary by means of gearing.

Third, Their durability, and the facility with which repairs and renewals can be made.

Fourth, They can be constructed and connected to the pumps at as small cost as any other form of turbine wheel. No objection can be urged against the Jonval wheel, arranged as proposed, except that involving mere mechanical arrangements, viz.: the step and bevel gearing necessary. Practically, these are not objections; the step of the present wheel at Fairmount Works has required but one renewal since it has been erected, which is the only repair found necessary to the wheel; and, as regards the bevel gearing, or reducing the velocity for the proper speed of the pumps by two or four wheels, there is only an apparent additional loss by friction, but none in reality, as a little reflection will demonstate.

Fifth, The favorable experience the city has had with the wheel of this kind at Fairmount, built by Emile Geyelin, which has been in constant use since December, 1851.

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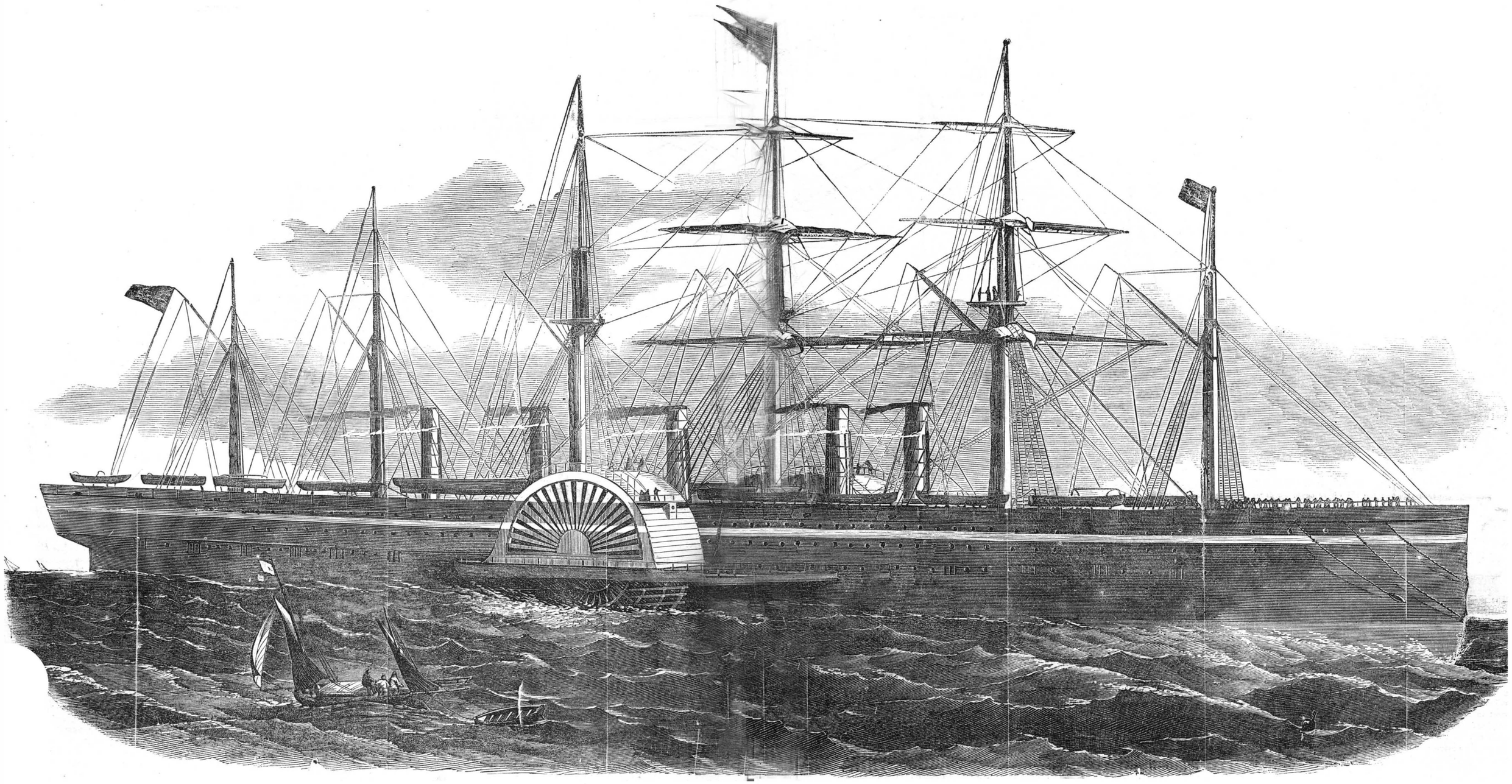

THE ARRIVAL OF THE MAMMOTH STEAMSHIP "GREAT EASTERN" AT NEW YORK.

This "leviathan" steamship arrived at this port on the 28th of June, and her appearance in our waters has created a much greater national excitement than the *pow-wow* got up for the recent reception of "John Japan" and his boy "Tommy." To this steamer we may well apply the old saying, "Long-looked-for has come at last," for assuredly no enterprise, excepting, it may be, the laying of the Atlantic cable, has upheaved the public mind on both sides of the Atlantic with so many hopes and fears during the past four years. But after many disappointments, the *Great Eastern* has at last safely and slowly breasted the billows of the Atlantic and is now moored in Manhattan waters. We will therefore give a succinct history of her construction, previous adventures and late voyage.

There are three leading features connected with the *Great Eastern* which naturally excite attention. These are, first, her great magnitude—she being 692 feet in extreme length, 83 feet beam, and of 27,000 tuns actual capacity; second, her peculiarity of construction—being of iron, and double cased to about three feet above the water line, and built on the cellular principle; third, she is propelled by the combination of paddle-wheels at the sides and a screw at the stern. With regard to her magnitude, some contend that this exceeds Noah's ark; but be that as it may, we know that the clipper ship *Great Republic*, the frigate *Niagara*, and the steamer *Adriatic*—all fully loaded—would make about a fair cargo if taken within her capacious sides. She can carry 4,800 passengers, with good and full accommodations; or an army of 10,000 men, in a superior manner to any troop ship.

This great ship was planned by the late distinguished engineer, Mr. I. K. Brunel, upon the most rational grounds of success. In the great and increasing trade between Engpotentates, *savans*, and a great array of wealth and fashion that and Australia, it was found that common steamships wenhad assembled to witness the mighty event of the "leviathan" capable of carrying cargo or competing with sailing vesship rushing like a mountain from its fastenings into the obedi-owing to the great amount of coal required for such a long ent waters of the Thames—the iron mammoth, like a baulky age. Brunel calculated that a large ship could be built to horse, refused to obey the reins of the driver; and it cost no sufficient coal for the entire round trip and at the same less than $400,000, and constant labor from that day till Jan. make quick passages, take a great number of passengers, t 31st in the subsequent year, before she was floated in the good paying cargo besides. He therefore designed the river. When launched, her entire cost was $3,831,520, *Eastern* (about 1853) with these objects in view; and a which exceeded the original estimate by $1,500,000, and pany of wealthy merchants in London was formed to fu yet she was then totally unfit for sea.

the capital to complete the project. To J. Scott Russel The *Great Eastern* is now fitted with eight engines for pro-given the contract for building the hull; in 1855, she pulsion, namely, four for the paddle-wheels, and the same plate was laid at his works in Millwall, London; and in number for the screw. Their united nominal power is about vember, 1857, she was ready to be launched. Great mor 4,000 horses. The cylinders of the paddle engines are each 74 tion was experienced on Nov. 2, when—mid a crowd of pri inches in diameter, and the stroke is 14 feet. These were illustrated on page 264, Vol. XII. (old series), of the SCIENTIFIC AMERICAN. The screw engines have cylinders of 84 inches bore and 4 feet stroke. The former were built by J. Scott Russell; the latter by J. Watt & Co., of Soho. The workmanship is excellent, but they are not up to the latest improvements. It takes about 250 tuns of coal per diem to supply them, and if this great ship were to be built over again, totally different engines and boilers would be put in. With all her machinery, her weight is 12,000 tuns—8,000 being the weight of the 30,000 plates of iron and rivets in the hull.

On August 8, 1859, the *Great Eastern* was pronounced completed for her trial trip, and on that day a grand banquet was given on board by the directors of the company. She did not, however, finally depart until the 7th of September last, when she made a very successful coasting trip of two days, but she met with the unfortunate accident of having her water-feed jacket burst, whereby five firemen were killed and several others severely wounded. This event was the result of blundering carelessness, and caused considerable damage to the boilers and main saloon, besides the deaths of the workmen. Just about this period her great designer, Brunel, was also breathing his last in London, and despondency seemed to settle down upon the public mind. Disagreements now arose among the directors; and Scott Russell was charged with improper workmanship in fulfilling his contract. The directors, however, were men of great capacity; their motto was "never say fail;" so they raised more money, and on went the alterations and repairs, with a tenacity of purpose and determination of will which does infinite credit to Uncle John Bull.

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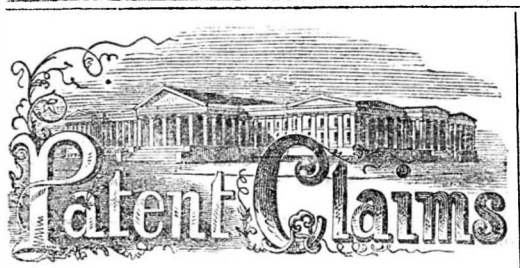

ISSUED FROM THE UNITED STATES PATENT OFFICE
FOR THE WEEK ENDING JUNE 26, 1860.

[Reported Officially for the SCIENTIFIC AMERICAN.]

"*" Pamphlets giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

28,821.—P. Z. Allen, of Knox, N. Y., for an Improved Washing Machine:

I claim the combination and arrangement of the conv. x rubbers, C C C, upright arms, D D, slot, d, cross-bars, E, bracket arms, F, pivots, f, cross-bars, J J J J, connecting-rods, l k, shaft, m, when used for the purposes specified.

28,822.—H. H. Angell, of Clermont, Iowa, for an Improvement in Unloading Hay:

I claim the employment or use of the carriage, C, fitted on the ways B B, provided with a tackle frame, G, and hooks, H H, and used in connection with the rope mechanism, M, and the hook separator formed of the bars, L d, and beveled projections, e, or their equivalents, all being arranged and applied substantially as and for the purpose set forth.

[This invention has for its object the facilitating of the unloading of hay and other crops from carts or wagons direct from the field, and moving the same as it is unloaded. The invention consists in the employment of a carriage placed on suitable ways within the barn at its peak, said carriage having a tackle connected with it, and a catch or fastening; the above parts being used in connection with a detaching device.]

28,823.—M. S. Beach, of Brooklyn, N. Y., for a Printing Press:

I claim, first, Closing the fingers of printing cylinders by the combined operation of the coil spring, G′, the finger crank, H and friction roller, H 2, and the cam, J 2, or their equivalents, constructed and operated substantially as described.

Second, Closing the fingers of printing cylinders by means of the pendulum switch cam, L, and the operating pin, N, or their equivalents, constructed and operated substantially as described.

Third, Closing the fingers of printing cylinders by means of the cam, K, and the combination of friction roller, I 2, and pin, I 1, or their equivalents, constructed and operated substantially as described.

Fourth, Opening or throwing backwards the fingers of printing cylinders or paper rollers by means of the coil spring, a′, and closing them by the combined operation of the finger crank, c, crank pin, c′, and the cam, e, or their equivalents, constructed and operated substantially as described.

Fifth, Depositing sheets on a board or table by means of the rollers T T, or their equivalents having an axial combined with a planetary motion, constructed and operated substantially as described.

Sixth, The rollers, T 2, used in connection with the rollers, T T, in drawing forward and depositing sheets or their equivalents, constructed and operated substantially as described.

Seventh, The concave form of the fly-board, D, Fig. 1, as described.

Eighth, The deflecting points, F, or their equivalents, used in connection with the rollers, T T, in depositing the sheet, constructed and operated substantially as described.

28,824.—L. A. Beardsley, of South Edmeston, N. Y., for a Machine for Removing Bark from Willows, &c.:

I claim, first, A rubbing slab having its acting surface of undulating form, as described, the said surface being formed of yielding segments, the whole being constructed substantially as described and for the purpose specified.

Second, The rubbing slab, H, having a flat, elastic, and yielding surface, acting in combination with another properly formed slab and a feeding device acting substantially as specified.

Third, Receptacles for water forming part of the rubbing slab, as described.

Fourth, Giving to the rubbing slabs or one of them a motion, at times and by means of the cams, d d, or their equivalents, which shall separate the two slabs, and prevent their action upon the twigs, while the twigs are moved, for the purpose of feeding,

Fifth, A yielding clamping surface, in combination with another surface, the said surfaces acting in combination with a separate rubbing device, when the said clamping surfaces act to feed the twigs, substantially in the manner described.

Sixth, The mode substantially as specified for presenting different portions of the twigs to the action of the rubbing surfaces, its characteristics being that the twigs are moved by the feeding device during the time when the pressure of the rubbing surfaces upon the twigs is relieved, and that the feeding device ceases to act upon the twigs at a time when the pressure of the rubbing surfaces is upon the twigs.

Seventh, In combination with a rubbing mechanism for loosening the bark and a feeding device, an automatic raking or scraping device, constructed substantially in the manner described and for the purpose specified.

28,825.—C. C. Bier, of New Orleans, La., for an Improved Iron Tie for Cotton Bales:

I claim the particular novel mode of making an iron tie, for the purpose of securely fastening of cotton bales, or other baled goods, as described, using for the manufacture of the same any metal suitable for the purpose.

28,826.—Caleb Bond, of Richmond, Ind., for an Improvement in Water Wheels:

In combination with the passages, g, I claim the hinged auxiliary buckets, h, the whole being constructed and arranged to operate, substantially in the manner as specified, for the purposes described.

28,827.—N. W. Bonney, of Victoria, Texas, for an Improved Bolt for Doors:

I claim the combination of lever stop, j, cam, i, and spring, b, with the two wings, m n, of a door, when the same is so applied that the closing of two wings brings the bolt into effective action, and the opening of the wing which has the lock applied to it allows the bolt to automatically cease its action, as set forth.

28,828.—E. W. Brettell, of Newark, N. J., for an Improved Lock:

I claim the employment or use of the tumblers, b, placed within the tube, F, which is fitted within the cylinder, E, attached to the lock case, in connection with the plate, I, stationary or yielding, the tube F, having the dog, J, attached, and all arranged substantially as and for the purpose set forth.

28,829.—R. M. Brooks, of Greenville, Ga., for an Improvement in Cultivators:

I claim the arrangement of the seed-box, H, as constructed with the standard, B, distributing cylinder, G, provided with pins or teeth x x, and with the slide, I, provided with an opening, S, when the same are used substantially as and for the purpose specified.

28,830.—W. W. Burson, of Yates City, Ill., for an Improvement in Grain-binders:

I claim extending and contracting the fore-arm, A, by the action of the rear portion of A′ upon the cords, B and C, substantially as set forth.

The combination of the hooks, Z P u, and the bent lever, S, operating substantially as described.

The arrangement of hooks, P and u, whereby the latter is passed through the loop, substantially as and for the purposes described.

The arrangement of lever, S, in combination with shield, h, acting substantially as and for the purpose set forth.

The slotted hook, Z, in combination with hook, a, substantially as described, for the purposes specified.

The hook, a, and receptacle, c, arranged and operating together substantially as described and for the purposes set forth.

28,831.—J. F. Cameron, of Livingston county, Mo., for an Improvement in Cultivators:

I claim the described arrangement and combination of the rotary coulters, Z Z, beam, B, bar, C, helves, A F G H I K and L, cross-bars, M N, and braces, D E O P Q R S T U V, in the manner and for the purposes set forth.

28,832.—John Champlin, of East Middlebury, Vt., for an Improvement in Water-elevators:

I claim, first, The buckets, F, one or more attached to the pulleys, C C′, of shaft, B, in connection with the tilting shoes, E, through the medium of the links and rims, j j, or their equivalents, and the pawls arranged relatively with the ratchet, a, as and for the purpose set forth.

Second, The ball, I, and box, H, on shaft, G, in connection with the pawls, b b′, attached to the inner side of the curb, A, the shaft being connected to the shoes, E, through the medium of the links and arms, j i, or their equivalents, and the pawls arranged relatively with the ratchet, a, as and for the purpose set forth.

Third, The adjustable spout, L, arranged in connection with the slide, M, and tilting shoes, E, and adjusted respectively within and to the curb, substantially as and for the purpose set forth.

28,833.—James Charlton, of Alleghany, Pa., for an Improvement in Cultivators:

I claim the arrangement of the flanged bar, e, bent so as to form the segment of a circle and furnished with slots, x and i, the bar point or moldboard and scraper being attached to said flanged bar, arranged, constructed and operated as described and for the purpose set forth.

28,834.—E. D. Clark, of Earlville, N. Y., for an Improvement in Mills:

I claim so combining a fanning device with a mill for crushing and shelling corn as that, by the movement of the shifter, N, the contents of the hopper, G, may be discharged into mill, B, or through spout, C; the parts composing said mill being arranged substantially as described and for the purposes set forth.

28,835.—J. M. Cobb, of Jackson, Tenn., for an Improvement in Cotton-scrapers:

I claim the construction and arrangement of the frame, sole and moldboard, when united in the manner and for the purposes represented and described.

28,836.—J. M. Cobb, of Jackson, Tenn., for an Improvement in Plows:

I claim the combination and arrangement of the moldboard, standard and sole with landside plate, H, and beam, A, and with the subsoiler, I, as represented and for the purpose set forth.

28,837.—C. L. Daboll, of New London, Conn., for an provement in Fog Alarms.

I claim, first, The general method, substantially as set forth, by which air which has been mechanically condensed shall be applied to the sounding of a trumpet or whistle for the purpose of giving marine signals by sound.

Second, The use of the cam, C, when used for the purpose of communicating a series of signals more intelligible than mere independent sounds, substantially as set forth.

Third, The combination of the cam, C, the stem, D, and valve, E, for the purpose of giving a variety of sounds of a trumpet or whistle, for the purposes and in the manner described.

Fourth, The trumpet, T, in combination with the reservoir, R, and connecting pipe, L, when used for the purpose set forth.

28,838.—Wm. A. Crowell, of Salisbury, Conn., for an Improvement in Spring Balances:

I claim arranging the adjustable index finger, I, relatively to the rod, E, and shoulders, K, substantially in the manner and so as to secure the advantages set forth.

28,839.—Wm. Dixon, of Chicago, Ill., for an Improvement in Loading Hay:

I claim the arrangement of the endless chains, K, rake teeth, J, guide pieces, L, stationary rake, P, apron, R and caster wheel, S, as and for the purpose shown and described.

[This invention consists in an arrangement of rakes upon endless chains which are made to move in a direction suitable for gathering and elevating cut hay from the surface of the ground and conducting the hay over a wagon placed in the forward part of the machine; the rakes are operated by suitable gearing driven by the wheels upon which the machine is supported.]

28,840.—Wm. C. Drum, of Bellevernon, Pa., for an Improvement in Feed-water Heaters for Steam Boilers:

I claim the heater composed of the vessels, A and B, the tubes, C C, with inlet and outlet pipes, D E F G, sediment collector, H, and receiver, L; the whole combined and arranged substantially as described.

[This improved feed-water heater consists of a vessel of cylindrical or other suitable form, having inclosed within it a smaller vessel so arranged within it as to leave a space between them above, below and on all sides, such smaller vessel having tubes running through and communicating at each end with the interior of the larger, but not with the interior of the smaller vessel, and the interior of the smaller vessel constituting a water space having an inlet from the feed pipe and an outlet to the boiler and a receptacle below it for sediment; and the space surrounding the smaller vessel and the tubes, constituting a steam space, having an inlet from the exhaust pipe of the steam engine or other apparatus supplied by the boiler, and an escape pipe to the atmosphere, with a receiver below said pipe for the collection of the water of condensation; the object of such apparatus being to heat the feed-water by the escaping waste steam.]

28,841.—J. P. Fuller, of New York City, for an Improved Garter:

I claim, as a new article of manufacture, the garter constructed substantially as described.

28,842.—E. N. Foote, of New York City, for a Watch Chain Hook:

I claim the watch hook, constructed as described and represented.

[This invention consists in the employment of a jointed ring or two elliptical bows, having a pointed tenon at the point where the two ends come together that fits into a corresponding hole made in one end of the bows, in combination with a female screw socket that confines the jaws of the bows together.]

28,843.—O. F. Fitch, of Morristown, Ind., for an Improvement in Cultivators:

I claim the described combination and arrangement of braces and frames, arranged in the relations set forth, and made to serve the purposes described.

[This invention consists in combining a large and small wheel with a plane beam that is made of two bars, and, with this beam, using curved handles that serve both for plowing and harrowing, while one wheel is only used in harrowing, and in applying such a plane stock and sector brace for adjusting the plow and bracing it to the beam that they will serve an important object in attaching the harrow to the plow, bracing it, and assisting in the extension and contraction of the harrow wings; the whole making a very cheap and convenient machine for the cultivation of drill husbandry.]

28,844.—Wm. C. Fisher, of Charlestown, Mass., for an Improvement in Bolts for Store Shutters:

I claim, as a new article of manufacture, the described bolt for securing store window-shutters, operating substantially as set forth.

28,845.—J. P. Fisher, of Rochester, N. Y., for an Improvement in Iron Bridges:

I claim, first, Combining the posts and the sections, A A and F, of the lower chord of the truss by means of the double dovetail lower portions, b, of the post, the dovetail grooves in the ends of the said sections, the shoulder, x, and the screws, c, on the posts, and the plates, i i, and nuts, g g; the whole applied and operating substantially as set forth.

Second, In combination with the sections, A and C, posts, B, saddles, j, connected and secured together, as described, I claim the transverse girders, G, and the tension braces, H I and J, applied and arranged relatively to each other and to the said sections and posts, substantially as specified.

Third, The tightning of the wire rope braces, H H and I, or any other wire rope tension braces of a bridge, by means of screws and nuts, r s and t u, constructed and applied substantially as described—that is to say, so that the screws tighten the braces by twisting their parts together and hold them tight, and serve to tighten them further by bearing in recesses in a rigid part of the structure, substantially as specified.

28,846.—D. F. Elmer, of Haydenville, Mass., for a Watch Key and Guard Bar:

I claim the combined watch key and guard bar, constructed as described, with a sheath having an L-shaped slot fitted to the key tube and to a pin or projection thereon, substantially as described.

[This is a very convenient and durable arrangement for combining the watch key and guard bar.]

28,847.—Davis Dutcher, of Blue Grass, Iowa, for an Improvement in Corn Planters:

I claim, first, The combination of the seeding and marking apparatus, operating together in the manner and for the purpose substantially as described.

Second, I claim the combination of the plows and supporting and gaging wheels, f, so that they may be self-yielding to pass over any intermediate obstacle and be raised up by the driver from his seat, in the manner and for the purpose mentioned.

Third, I claim, in combination with the rear supporting wheels and the front self-yielding wheels, the marking and seeding devices arranged between them, and a driver's seat behind, for the purpose of balancing the machine, and still allowing the front wheels to rise and fall with the plows, as represented.

28,848.—D. M. Dumzack, of Salem, Mass. for a Chisel for Opening Boxes:

I claim the arrangement and combination of the several parts, when arranged and combined as described, for the purposes set forth.

28,849.—F. N. Du Bois, of Chicago, Ill., for an Improvement in Machines for Crushing Quartz:

I claim, first, So constructing and arranging the stationary back of the hopper and the vibrating front of the hopper that the escape passage, S, shall extend on a curved line in rear or on one side of a line drawn vertically through the apex of the angle formed by the two inclined sides of the hopper, substantially as and for the purposes set forth.

Second, An adjustable stirrup, u, in combination with eccentrics, e f, and the arms, g h, of two or more vibratory jaws, p p, for the purpose of limiting the extent of the motion of these jaws, substantially as set forth.

28,850.—J. W. Gaines, of Melrose, Texas, for an Improvement in Millstone Dress:

I claim making each of the main grooves in five sections, a a b b a h i e j f g k c h l d m d n d, in combination with the shoulders, b c i j, and inclined planes, o e f p m l, in the manner and for the purposes described.

28,851.—J. E. A. Gibbs, of Mill Point, Va., for an Improvement in Sewing Machines:

I claim, first, So constructing a rotating looper and a stationary thread guard or guide, and applying the same in combination with the needle of a sewing machine, as to effect the twisting of the loop and the passage of each loop twice through its predecessor, substantially as described, for the production of the stitch specified.

Second, The employment of a stationary thread guard or guide, in combination with a rotating looper, for the purpose of spreading the loops to facilitate the entrance of the needle thereinto, substantially as specified.

Third, The stationary guard, M, applied in combination with a rotating looper, substantially as described, to prevent the looper from entering the loop which is being drawn up towards the cloth.

28,852.—J. J. Greenough, of New York City, for an Improvement in Pegging Machines:

I claim transferring the contact between the sole of the boot or shoe and the rest-piece, e, or its equivalent, to the block, d, or awl stock, a, or their equivalent, while the lateral movement is made to space the distance between the pegs, substantially as and for the purposes set forth.

I also claim driving the stock, a, by the combined action of the cam, f, or its equivalent, for raising the same, and the spring for forcing it down to drive the awl or peg.

I also claim the boot-clamp described, consisting of a heel and toe-rest and intermediate forceps or clamps, substantially as and for the purpose specified.

28,853.—Thomas Grundy, of Boston, Mass., for an Improvement in Water-closets:

I claim the arrangement of devices described, the same consisting of the piston valve, k, playing up and down in the cylinder, j, and operated substantially as and for the purpose specified.

28,854.—Daniel Guptail, of Elgin, Ill., for an Improvement in Raking Attachments for Harvesters:

I claim, first, The employment or use of lazy-tongs, I, with rake, J, attached in connection with the bar, H, with the rake or plate, M, attached; the lazy-tongs and bar being operated by the revolving arm, E, pin, K, and slot, G, substantially as described.

Second, The frame, N, in combination with the lazy-tongs, I, for the purpose of preventing the grain that is being cut, while the rake is in operation or passing over the platform, interfering with the operation of the rake, as specified.

[This invention consists in an arrangement of a system of levers known as the lazy-tongs, with rakes and a peculiar operating mechanism, whereby a very simple and efficient reaping device is obtained, and one that may be applied to all harvesters that have their sickles behind the ground wheel.]

28,855.—E. J. Hale, of Foxcroft, Maine, for an Improvement in Lamps:

I claim so combining or arranging a tubular air guard, D, within or with the cone or deflector, C, and with respect to the wick tube,

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that air passing up through the cone or deflector, C, shall be caused to freely circulate not only against the sides and edges of the flame of the wick, when inflamed, but against the outer surfaces of the sides and ends of the air guard.

I also claim so combining an air guard with the cone or deflector as to be removable with and by it, with respect to the wick tube, as set forth.

28,856.—John Hamlyn, of Bellevue, Mich., for an Improvement in Stump Extractors:

I claim the application and use of the described arrangement of toggle bars, T T, disks, G and H, rollers, c c c, &c., rack bar, E, and catch pins, p1 p2, in combination with an auxiliary lever, L2, substantially in the manner and for the purposes described and set forth.

28,857.—Henry Harger, of Delhi, Iowa, for an Improvement in Setting Type:

I claim, first, The follower, C, with the arm, c, in connection with the pawl, E, and rod, D, or their equivalents, substantially as described and for the purpose seth forth.

Second, The finger, G, or its equivalent, substantially as described and for the purpose set forth.

Third, The composing stick, H, in connection with lever, K, bent lever, L, connecting rod, M, spring, N, follower, S, finger, P P, and bar, I, substantially as described.

Fourth, The guides, V V, or their equivalents, substantially as described and for the purpose set forth.

28,858.—H. M. Hartshorn, of Malden, Mass., for an Improved Carpet-stretcher:

I claim the combination of the tack-holding cup with the carpet-stretcher, composed of a toothed plate and provided with a handle, as specified.

28,859.—James Hathen, of Philadelphia, Pa., for an Improved Carpenters' Square:

I claim the use of one or more adjusting clamps, J, attached to either end of the square stock, and made to serve in conjunction with the pins, C and C', for securing the blade to the stock and setting the same in a proper position substantially as described and represented.

[This invention consists in attaching the blade of a square to the stock by one or more adjustable screws, applied at either end of the stock, in connection wth a clamping plate or plates and a pivot attachment of the blade. This admits of an adjustment of the blade in case it should be out of true.]

28,860.—H. L. Haynes, of Keene, N. H., for an Improved Coupling for Shafting:

I claim, in combination with the keys, D D, and coupling, A, the scarfs, J J, in the ends of the shafts, B B, constructed as described.

28,861.—G. J. Hill, of Buffalo, N. Y., for a Dating Machine:

I claim the relative arrangement of the type apron, G, type, D, and platen, H, with the inking rollers, E K K', and automatic lever, M, for the purposes and substantially as described.

28,862.—J. J. Holwell, of New York City, for a Fire-escape:

I claim, first, The arrangement and combination of the wheeled tormentors, F, pointed rods, e, windlass, E, truck, B, and ladder, A, constructed and operating substantially in the manner and for the purpose specified.

Second, The arrangement of the adjustable cross brace, d, in combination with the tormentors, F, constructed and operating substantially as and for the purpose set forth.

[An engraving and a full description of this invention will appear in our paper in a few weeks.]

28,863.—J. W. Houghtelin, of Du Quoin, Ill., for an Improvement in Bran-dusters:

I claim the employment or use of the bolt or screen, F, plates, f, and gatherers, g, placed within a case, A, and arranged to rotate in reverse directions, when combined with the spiral wire or ledge, G, feeders, h, and scrapers, d, substantially as and for the purpose set forth.

[The object of this invention is to obtain a machine that will cleanse the bran thoroughly, and, at the same time, allow the same to pass readily through without the liability of choking or clogging.]

28,864.—G. C. Howard, of Philadelphia, Pa., for a Printing Press:

I claim the combination of the plate, A, the sliding rod, I, the shifter rod, B B, and the treadles, H H', or their equivalents; the whole being connected by levers or their equivalents, and so arranged that the machine cannot be started in the wrong direction, substantially as described.

28,865.—J. C. Howels, of Madison, Wis., for an Improved Nozzle for Fire-engines:

I claim the arrangement and combination of the rotary collar, C, cap, F, the ears, b b, the pins or screw heads, c c, with the adjustable mouth-pieces, B B, substantially as and for the purposes set forth and described.

28,866.—A. P. Hutchinson, of Pembroke, N. H., for an Improvement in Attaching Whiffletrees to Sleighs:

I claim arranging the whiffletree so as to project beyond one of the thills, in the manner described.

I also claim the application of the whiffletree to the thill bar, by an adjustable slider or its equivalent.

I also claim the arrangement or combination of the spring stops, c d, with the thill bar and the adjustable slider applied thereto and made to support the whiffletree, substantially as specified.

28,867.—W. H. Jenifer, of Baltimore, Md., for an Improved Military Saddle:

I claim the combination and arrangement of the flat English seat, H, the curved cantle, B, the pommel, A, the curved valise, C, the flaps, F, surcingle, D, slots, E E; tho whole constructed and used as specified.

28,868.—T. J. Jolly, of Olean, Ind., for an Improvement in Loading Hay:

I claim the reciprocating toothed rods, H, constructed and operating in combination with gathering mechanism, E F G, in manner substantially as and for the purposes set forth.

28,869.—George Juengst, of New York City, for an Improvement in Shuttles for Sewing Machines:

I claim the brush, b, in combination with the center, a, spring, c, and screw, d, as specified, whereby the whole of the parts can be removed for changing the spring and the position of the center, a, can be adjusted, as set forth.

28,870.—Thomas Kinghorn and Robert Kinghorn, of Morgan, Ohio, for an Improvement in Cultivators:

We claim the combination of the adjustable side-pieces, B B, with their teeth, H, and adjusting rear supports, D D, with the central beam, A, hooks, e e, and caster wheel, E, arranged to operate in relation to each other substantially as and for the purposes set forth.

28,871.—K. P. Kidder, of Burlington, Vt., for an Improvement in Beehives:

I claim the removable and reversible bee-catcher or passage way, g (shown in Fig. 2), provided with a series of pivoted pendant doors or slats, R, arranged and applied to the beehive in the manner and for the purposes specified.

28,872.—George Lavally, Jr., of Champlain, N. Y., for an Improvement in Couplings for Railroad Cars:

I claim the application to rail car bunters of slots, T V and L, a lever, N, supported at center by a fulcrum, G, and attached to the pintle, A, a bar, S, a spiral spring, R, the steel spring, C, and the cord or chain, M, constructed and arranged substantially as described.

28,873.—●. L. Lawson (assignor to the New York Car and Steamboat Gas Company), of New York City, for an Improvement in Gas-holders:

I claim the reservoir, E, composed of one or more cylinders, or its equivalent, placed between the force pumps, B, and holders, K, for the purpose of facilitating the filling of said holders, substantially as set forth.

28,874.—John Lee, of Bolivar, Ohio, for an Improvement in Post-hole Diggers:

I claim, first, The hollow self-discharging digger, constructed and operating as set forth.

Second, I claim the wheel, A, and levers, B, in combination with the digger, C, operating as described and for the purposes set forth.

28,875.—Wm. H. Letterman, of Philadelphia, Pa., for an Improvement in Desulphurizing Ores and Coal:

I claim the described process of treating oil and coal with chemical ingredients and steam, substantially as set forth, for the purposes specified.

28,876.—William Lewis and Wm. H. Lewis, of New York City, for an Improvement in Photographic Baths:

We claim securing the edges of the glasses, d g, in grooves in the frame, a a b, in the manner and for the purposes specified.

28,877.—Austin Leyden, of Atlanta, Ga., for an Improvement in Sewing Machines:

I claim giving the swivel hook the necessary movement upon the spindle, n, which carries it around the spool-carrier bed, N, by means of two eccentrics, r and s, attached to the hollow stem and working in eccentric ways, t and u, surrounding the said bed, N, substantially as described.

[This invention consists in an improved mode of operating what is termed the swivel hook, employed in combination with a spool applied as described in the Letters Patent granted to the above inventor, dated Jan. 3, 1860.

28,878.—Leon Londisky, of New York City, for an Improved Mode of Binding Cap Fronts:

I claim the binding of cap fronts with japanned, colored or enamcled metal, by means of flexible tools, substantially as described and for the purpose set forth.

28,879.—D. W. M. Lower, of Albia, Iowa, for an Improvement in Seeding Machines:

I claim, first, The connecting of the wheels, B B, and roller, C, by means of the cranks, a a b b, and rods, E, when said wheels and roller have the pins, l l, and rib, c, attached respectively to them as shown, and are used in connection with the seed distributors, H, or their equivalents, substantially as and for the purpose specified.

Second, The attaching of the shares, J, hoppers, G, and seed-distributing devices to adjustable frames, F, arranged as described, to admit of the varying of the depth of the furrows as circumstances may require.

[This invention relates to that class of seeding machines designed for planting corn and other seeds in hills and in check rows. The object of the invention is to place the machine under the entire control of the attendant or operator, and insure an uniform dropping of the seed as well as to regulate the depth of the planting of the same as circumstances may require.]

28,880.—William McCord, of Sing Sing, N. Y., for an Improved Fire-escape:

I claim, first, The arrangement and combination of the rising and falling frames, G H I (more or less), links, F, braces, i, and platform, L, constructed and operating substantially as and for the purpose specified.

Second, Arranging the links, F, and braces, i, with rounds, substantially as described, so that the same form the means to go up to and down from the platform, L.

Third, The combination with the platform, L, of a ladder, N, and swivel, M, constructed and operating substantially as and for the purpose specified.

Fourth, The arrangement of the derrick, O, and rope, T, to operate in combination with the ladder, N, and swivel, M, substantially as and for the purpose described.

[This invention consists in arranging a series of rising and falling frames on links supported by self-acting braces and operated by two windlasses, in combination with a platform, in such a manner that by raising one frame after the other, the platform can be elevated to a considerable hight, convenient for the firemen to reach the fire in a building or to assist the persons inclosed in a burning building to escape.]

28,881.—Robert McCormick, of Greenville, Va., for an Improved Machine for Stoning Fruits:

I claim the combination and arrangement of the right and left screws, A A', the brushes, B B', the cog wheels, D D', the bands, E E', the pulleys, f f', the hopper, H, the follower, h, the screw check, i, the gage, a, the band-tighteners K K—all substantially as and for the purpose specified.

28,882.—John McCullock, of San Francisco, Cal., for an Improved Process of Treating Ores of Gold, Silver or Copper:

I claim the mode of reducing and liberating the metals—gold, silver and copper—from their ores, together or separately, by mixing with any one or more of the said ores, in a very finely powdered or comminuted state, and when intimately mixed with grond charcoal or other carbonaceous matters, a certain proportion of plastic material, as common brick clay, china clay, or any other natural or compounded materials, that will agglutinate only at temperatures under a white heat, forming the metalliferous and carbonaceous mixture so compounded with plastic material into masses, bricks, blocks or cakes, and then submitting the whole to artificial heat, which is continued while the carthy frame-work, which forms a porous matrix commanding a great extent of internal as well as external surface, holds and exposes the metallic ores or compounds; and also the carbonaceous matters to the decomposing action of atmospheric air, oxygen, carbon and heat, in a kiln, clamp, oven or furnace. The reduced metallic constituents may then be collected by pulverization, washing in water, and subsidence therefrom, by melting and fluxing, or by amalgamation, as may be most convenient.

28,883.—J. W. McLean and A. Gummer, of Indianapolis, Ind., for an Improvement in Lath Machines:

We claim the rack, d d, the angular slot, g, Fig. 2, the section of wheel, e e, or their equivalents, in connection with the rod, k, Fig. 1, the two supporters, l l, and the set screw, m, substantially as and for tee purpose set forth.

28,884.—D. M, Mefford, of Jeffersonville, Ind., for an Improvement in Corn-huskers:

Rclaim, first, The combination of spiral beads and grooves on vertical or inclined rollers adapted in the manner set forth, to act continuously during the descent of the ear, substantially as described.

Second, The use of teeth or serrations in the bead substantially in the manner and for the purpose set forth.

28,885—G. E. Mills, of New York City, for an Improved Amalgamator:

I claim a series of floors inclined reversely one above another, in combination with the several dams and compartments to retain the minerals as deseribed and for the purposes specified.

28,886.—T. S. Mills, of Iberia, Ohio, for an Improvement in Corn Planters:

I claim the cam, E, when formed of two parts, h i, for operating the seed slide, F, and markers, H, and fitted in the adjustable frame, D, having the shares, G, attached by the rods, n, for the purpose of admitting of the connection or disengagement of the wheels, d g, and the adjustment of the shares, G, substantially as described.

[The object of this invention is to obtain a corn-planting machine of simple construction, by which corn may be planted in check rows without previously furrowing the ground. The invention consists in the use of markers combined with a seed-dropping mechanism, all being arranged in such a way that, as one row of hills are planted, the spots for the hills in the succeeding row will be marked, and the seed-dropping mechanism placed under the complete control of the driver or operator, so that the latter can cause the seed to be dropped at the desired spots.]

28,887.—G. A. Mitchell, of Turner, Maine, for an Improved Machine for Cutting Blanks for Shoe Tips:

I claim the double die-holder, E and G, and cutting die, H, in combination with cutter, J, stamp, S, and guide, U, to cut and stamp the blank at one operation, essentially in the manner and for the purposes fully set forth and described.

28,888.—G. A. Mitchell, of Turner, Maine, for an Improved Machine for Swaging Shoe Tips:

I claim the combination of the die, G, guide, K, die box or holder, E, and follower, J, arranged and operated in the specific manner described and for the specific purpose fully set forth and described.

28,889.—W. P. Mitchell, of Baltimore, Md., for an Improvement in Hemming Attachments for Sewing Machines:

I claim the arrangement and combination described of the toothed wheel, C, and the non-metallic concave wheel, D, of larger diameter formed of india-rubber, leather or their equivalent flexible material, both wheels being attached to and revolving on the same axis, g, as and for the purposes set forth.

28,890.—S. A. Morgan and C. C. Morgan, of Auburn, N. Y., for an Improvement in Harrows:

We claim a harrow composed of at least two hinged and separately-adjustable segments, A A, furnished with adjusting bars running across the frames, and so that they may be detachable and capable of use when so separated, as cultivators by applying handles to the adjusting bar, substantially in the manner and for the purpose set forth.

28,891.—Levi Morris, of Woodbury, Ill., for an Improvement in Corn Planters:

I claim the combination of the double crank, L, with the pitman, K, the rod, R, the slide, P, the levers, J J, the hoes and handles, m and n, and the mechanism connecting and regulating them, for the purposes and substantially as described.

28,892.—J. A. Naylor, of Rahway, N. J., for an Improvement in Adjustable Carriage Seats:

I claim the jointed and branched bars, C C, and the rod, N, in combination with the slots or slides, I, and the seats, A and B, when constructed substantially in the manner described.

28,893.—Cæsar Newman, of New York City, for an Improvement in Machines for Making Hoop Skirts:

I claim, first, The twisting apparatus constructed substantially in the manner and for the purposes set forth, and consisting of a spool-holder and tension apparatus as described, and strand guides or head and cap, as described.

I also claim the hedd and cap, i', as specified, however combined in the manufacture of hoop skirts,

I also claim the tension apparatus and flyer frame constructed and applied as set forth in the manufacture of skirts by machinery.

I also claim the guides, g, for guiding the springs or loops into place, in the manufacture of hoop skirts however made, so that a spring can be inserted by one end and pushed around into place without being guided by hand into the curve—all as specified.

I also claim the employment of the elevating cord, c, and drum, d, combined with the machinery for forming the spring skirts, as specified.

28,894.—John Ollis, of Bloomington Ill., for an Improvement in Automatic Rakes for Harvesters:

I claim the mechanism substantially as described for operating the rake.

28,895.—Andrew Overend, of Philadelphia, Pa., for a Machine for Wetting Paper:

I claim the reciprocating carriage, C, combined with the perforated water tubes, I I J J, the feed and receiving platforms, V R E', and the paper-holding and discharging device formed of the rod, D', and plate, C', or their equivalents arranged for joint operation substantially as described.

[The object of this invention is to obtain a machine by which paper may be moistened in a very expeditious and thorough manner preparatory to the printing thereof. The invention consists in the use of a reciprocating frame, perforated water-supply tubes, feed and receiving boards or platforms and a holding device, arranged for joint operation to effect the desired end.]

28,896.—Benjamin Owen, of Dayton, Ohio, for an Improvement in Cotton-seed Planters:

I claim the arrangement of the cylinders, D D, with the slides, C C, when said cylinders are provided with teeth and revolve in opposite directions to each other, and when the slides are provided with seed apertures and have an alternate reciprocating motion under the cylinders, substantially as and for the purpose specified.

28,897.—Nathan Parish (assignor to G. B. Peters), of Galesburgh, Mich., for an Improvement in Stump Extractors:

I claim the arrangement of the rocking lever, b, with the frame, a, the cords, e and m, the tackle block, d', and with the chain or its equivalent which passes around the stump or grub in such a manner that power may be exerted by both ends of the lever, substantially as specified.

28,898.—J. W. Patten and G. P. Terry, of Albany, N. Y., for a Fire-escape:

We claim the arrangement of the spring, S, and the check rope, N, in their relation to the brakes, K K', and to the drum or reel, F, as set forth.

28,899.—J. G. Pavyer, of St. Louis, Mo., for a Machine for Scouring Type:

I claim, first, The application of endless aprons or their equivalents to stones or their equivalents, substantially in the manner described for the purposes specified, and—

Second, Connecting the upper and lower stones and aprons with each other by means of yielding connections, so as to allow the type to pass between them, and so that they will adjust themselves to the different thicknesses of type, substantially as described.

28,900.—J. G. Perry, of South Kingston, R. I., for an Improved Sausage-filler:

I claim the combination of the cylinder, B, and stud slips, D, substantially as described herein and for the purposes set forth.

28,901.—Ludlow Pierson, of Jeffersonville, Ind., for an Improvement in Making Eave Troughs:

I claim, first, The combination of block, A, rocker, B, and jaw, C c D—the whole being constructed and operating substantially as set forth.

Second, The crimping clamp composed of the hinged blocks, G G, jaw, G'', lever, H, and staple, I I'.

Third, The final soldering clamp, J K L M, constructed and operating as explained.

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28,902.—A. D. Purinton, of Dover, N, H., for an Improved Hat Cushion:

I claim the elastic felted cushion, C, interposed between the sweat leather, A, and the crown of the hat, substantially as described for the purpose specified.

28,903 —T. H. Quick, of New York City, for an Improved Machine for Cutting Sugar:

I claim the arrangement and combination of two pairs of movable cutting surfaces having their cutting edges at right angles to the other, and at such distances one from the other that, by the successive action of said cutting surfaces, the sugar is cut up in the desired shape, substantially as described.

[The object of this invention is to cut up loaves of sugar in regular cubic lumps of a convenient size for daily use. To accomplish this, the loaf is first cut up in slabs or disks of the thickness of about three-quarters of an inch, and these disks are passed through between two pairs of rollers or through between two different pairs of movable cutting surfaces, one pair to cut up the disks into four-sided prisms, and the other pair to cut up these prisms into cubic lumps of the desired size.]

28,904.—J. J. Reeves, of Sulphur Springs, Texas, for a Medical Compound:

I claim the medical compound described.

28,905.—John Rix and J. S. Shaw, of Springfield, Mo., for an Improvement in Rotary Engines:

We claim the combination of the two hollow, sliding abutments, E E′, and the slide valve, K, the said abutments being provided with parts, d d′, as described, and applied within separate compartments of a box, D, to which steam is admitted by the said valve alternately, and the whole operating as set forth.

[The nature of this invention is ixplained by the said claim.]

28,906.—Charles Seltman, of Washington, D. C., for an Improved Shutter Operator:

I claim the combinat on and arrangement of the shank, A, notches, f f′, cog plate, d, spring, i, pinion, D, rack, d, wedge-shaped tongue, k, correspondingly-grooved bar, h, crank hinges, E E′, and the metal boxing, F, when used in the manner and for the purposes specified.

28,907.—J. W. Shipp and C. W. Crenshaw, of La Grange, Tenn., for an Improvement in Plows:

We claim the arrangement of the handles, H, standard, B, ring, a, notches, l l, bar, A, standard, C, mold board, E, heel, G, and double point, F—the whole operating substantially as set forth.

28,908.—C. W. Smith, of Evans, N. Y., for an Improvement in Window Blinds:

I claim, first, The described method of operating the blind slats, a a, by means of jack levers.

Second, The described method of attaching them to the levers.

Third, Weighting said levers to assist in elevating the blinds.

28,909.—Hervey Sloan, of Franklin, Ind., for an Improvement in Seed Planters:

I claim the arrangement of the seed boxes, A A′ A″, which are provided with three slides connected together and to a pitman or driving rod, a, by means of a cross-head, d, substantially as and for the purpose specified.

The arrangement of the seed boxes, A A′ and B B′, in the relative positions seen—their seed slides being connected together by the bars, c c, substantially as and for the purpose specified.

The combination of the gear-frame, F, provided with levers, m and n, and chains or cords, p, with the frame upon which the seed boxes are placed, when the same are arranged substantially as and for the purpose specified.

28,910.—O. M. Stillman, of Stonington, Conn., for an Improvement in Air Engines:

I claim, first, Compressing and working the air in the single cylinder, A, by the single piston, B, in combination with the valves, an air passage, R r′ E F F and M, or their equivalents arranged and operating substantially in the manner specified.

Second, The combination of the induction valve, R, with the stuffing box, R′, piston rod, B′, and head, A′, of the cylinder, A, so that the friction of the stuffing box upon the piston rod aids and controls the motion of the valve, substantially as shown and described.

Third, Causing a circulation of air through an annular space between the plunger, O, and the interior of the piston or piston rod, for the purpose of cooling the latter, substantially as set forth.

Fourth, Cooling the exterior of the cylinder, A, by alternately inducting and expelling air through an annular space, X, substantially in the manner described.

28,911.—O. M. Stillman, of Stonington, Conn , for an Improvement in Air Engines:

I claim, first, Using a portion of the power of an engine to cool the air used in the same by blowing currents of air over the moistened surfaces of the refrigerating vessels, substantially in the manner set forth.

Second, The arrangement of the refrigerating reservoir, G, and blowing vessel, O, relatively to the cylinder, A, and piston, B, substantially as set forth.

28,912.—John Sweeney, of Chicago, Ill., for an Improved Tobacco Press:

I claim the combination of the worm wheel and screw, E F, chains, J, cross-head, L, guides, B B, follower, C, one or more, and base or box, A, with the ratchet and lever, H′ I′, or their equivalents arranged for mutual action as and for the purpose set forth.

[This invention consists in the use of a worm wheel and screw combined with chains, stirrups, a cross head and guides, whereby a very simple, compact and powerful press is obtained, and one that may be manipulated by any one of ordinary ability—the invention being designed for manual operation.]

28,913.—W. A. Suddith and J. F. Suddith, of Charlestown, Va., for an Improvement in Cotton-seed Planters:

We claim the arrangement of the rocking beam, C, arm, o, piston, D and Y, spring, R, shaft, G, with spiral spring and cavity, B, constructed and operated as described for the purpose specified.

28,914.—Joseph Sutter, of New York City, for an Improvement in Seeding Machines:

I claim the arrangements of the arms, L, the moldboards, M, the seed-spouts, F, the cylinder, D, as constructed, and the cylinder, G, provided with harrows, d, when the same are connected together and to the frame, C, in the manner and for the purpose specified.

28,915.—A. B. Taylor, of Newark, N. J., for a Printing Press:

I claim the combination of the endless rack of the type carriage with the cog wheel that imparts motion to it, by means of two pinions and a solid pinion shaft having boxes or bearings that adapt themselves to the different positions which the piniou shaft assumes in the operation of the printing press.

I also claim the combination of the griper shaft, an arm and stop (for rocking it) and a cam and pin (which control its rocking) substantially as set forth.

28,916.—C. A. Taylor, of Chicago, Ill., for an Improved Bonnet Box:

I claim the arrangement of the sliding stand, D, form, E, and movable spring pad, F, in combination with the box, A, constructed and operated substantially in the manner and for the purpose set forth.

[This invention consists in arranging in the bonnet box an adjustable stand with a suitable form to receive the crown of the bonnet, in combination with a spring pad in such a manner that bonnets of different sizes can be secured between said form and spring pad and sent from place to place without getting injured, even if the box be roughly treated and knocked about without regard to its contents.]

28,917.—Richard Taylor and Rensellaer Sprague, of Prairie City, Ill., for an Improvement in Corn Planters:

We claim the atattaching of the seed boxes, F, and the furrow and ccvering shares, l H, to sliding frames, E, placed on inclined surfaces, b c c, and having the seed slides, G, of the boxes, F, arranged in relation with the staples or tappets, l i, on the axle, c, substantially as and for the purpose set forth.

We further claim, in connection with the slsding frames, E, having the seed boxes and shares attached, the lever, K, provided with the notch, o, and arranged relatively with the pin, p, for the purpose when necessary of stopping the rotation of the axle, C, as set forth.

[This invention relates to a novel and improved arrangement of seed boxes and shares, whereby the seed-distributing device may, when necessary, be rendered inoperative with the greatest facility, and the shares, at the same time elevated, above the surface of the ground—both results being obtained by the same movement or manipulation of the driver.]

28,918.—James Thierry, of Detroit, Mich., for an Improvement for Regulating the Exhaust of Steam Fngines:

I claim, first, The combination of the exhaust nozzle or nozzles of locomotives or other steam-blast employing engines with a steam-balanced exhaust valve controlled by the variable pressure of the steam in the boiler, through the medium of an elastic siphon-shaped steam tube or its equivalent, said combination producing a governor to regulate the generating of steam for said engines substantially as described.

Second, The cambination of said nozzle or nozzles with said balanced exhaust valve controlled by the eng ne man through the medium of a cobvenient hand gear, in substance and for the purpose as described.

28,919.—J. P. Thompson, of Jackson, Tenn., for an Improvement in Plows:

I claim the frame, c, with its plow point, j, and wings or mold boards, D, when the whole is constructed, arranged and united as set forth and described.

28,920.—Fr. Toggenburger, of Chicago, Ill., for an Improvement in Sewing Machines:

I claim the arrangement of a tubular projection, v, on the cap, P, in combination with a loop, w, or its equivalent, on the shield, Q, constructed and operating substantially as and for the purpose described.

[By this improvement a correct action of the needle and the looper in relation to each other, is insured, and a dropping of any of the loops is prevented.]

28,921.—Albert Tracy, of the United States Army, for Improved Folding Furniture:

I claim, first, In the construction of articles of furniture, the combination of the swinging straps or arms, C, constructed as described, with either pair of legs, or their equivalents, substantially as set forth.

Second, I claim the fixed strap or arm, C, constructedas described, and connected and operating with the legs, substantially as set forth.

28,922.—Gregor Trinks, of Jersey City, N. J., for an Improved Window Curtain Slide:

I claim, in connection with the slide of a sliding cord pulley of a window curtain fastening, the improved construction and arrangement of the spring latch and double rack, substantially as described, and substantially for the purposes set forth.

28,923.—H. C. Yelie, of Poughkeepsie, N. Y., for an Improvement in Mills:

I claim casting the arm, J, on the case of the mill to support the journal of the shaft, and allow room for the hopper around the shaft between said arm and the case of the mill, substantially as described.

28,924.—George Walker, of Philadelphia, Pa., for an Improvement in Vapor Lamps:

I claim, first, The combination of the external shell or tube, G, with the wick or packing tube, F, and heater tube, I, provided with the heater. J, and plates, c c, for the purpose set forth.

Second, The ecnnecting of the described vapor-burning apparatus to the body of a lamp by means of a tube, D, in the manner substantially as and for the purpose set forth.

[This invention relates to a lamp for burning volatile hydrocarbons by first vaporizing or gasifying the same, the illuminating flame being fed by the vapor, and the invention being capable of being applied to the ordinary fluid lamps. The invention consists in a novel arrangement of a burner, heater, wick or packing tube, an external shell, and heater tube, so constructed, arranged and applied to the fountain or body of the lamp, whereby the hydro-carbon within the lamp may be quickly vaporized or gasified, the distance between the flame and the heater regulated as desired, according to the amount or intensity of light required.]

28,925.—Alonzo Warren and E. Damon, Jr., of Boston, Mass., for an Improvement in Dynanometers:

We claim combining the index, g, with the two pulleys, C D, by means of a spring pawl, f, slide, I, arc-formed ratchet bar, H, spring, l, and a socket, j, or other suitable projection from an arm, E, the whole applied and operating substantially as specified.

[This improved dynanometer is of that class which is used for measuring the power transmitted by shafting to machinery. It consists of two pulleys—one fast and the other loose—upon the same shaft, and the two combined by means of one or more arms and spiral springs working on one or more concentric arc-formed guides in such a manner that, by applying a belt to run on one of them from a pulley on the driving shaft and a belt to run from the other one to a pulley on the shaft to be driven, the power may be transmitted through the said spring or springs, and by such transmission, will produce a greater or less compression thereof, and the amount of this compression indicated upon a scale attached for the purpose to one of the pulleys of a dynanometer, will, if the velocity of the revolution of the pulley is ascertained, enable the power transmitted to be calculated. A part of the invention also consists in the manner of applying the index so that it may indicate the minimum of power transmitted.]

28,926.—David Warren, of Gettysburgh, Pa., for an Improvement in Seed Planters:

I claim the arrangement of the turning bar, F, the arms, H and a, the slide, d, rod, c, and stirrer, e, substantially in the manner and for the purpose fully set forth.

28,927.—Geo. Wheeler, of New York City, for an Improved Boot-jack:

I claim the new article of manufacture described, consisting of the forked base piece, a, and the detachable inclined standards, b b, with the swelled pins, 3 3, arranged in the manner and so as to combine the advantages set forth.

28,928.—Wm. Wickersham, of Boston, Mass., for an Improved Nail-cutting Machine:

I claim the described mechanism in nail-cutting machines for shifting or moving laterally the sheet of metal or material to be cut into nails the distance of the length of two nails, or more if desired, for each series of nails cut from said sheet, substantially as described.

Second, I claim feeding the material to be cut into nails far enough towards the cutters for the width of a nail while it is moving laterally, substantially as described.

28,929.—J. M. Williams, of Greenville, Ga., for an Improvement in Cultivators:

I claim the arrangement of the beam, A, the two collateral beams, B B, the graduated bars, a a, the handles, M M, the supports, F F, and the bar, D, when said bar is secured to the main beam and rests upon the collateral beams, and when the several beams are provided with vertical and horizontal mortises for receiving the bars and shanks, as is fully set forth, and for the purpose specified.

28,930.—R. S. Williams, of Bairdstown, Ga., for an Improvement in Plows:

I claim the casting of the foot, D, with a socket, E, and pockets, d, substantially as shown, to receive the beam, A, and the lower ends of the handles, C C, substantially as described.

I further claim, in connection with the sockets, E, and packets, d d, the base or cross-piece, B, and taper beam, A, the former being attached to the beam and handles, as described.

[This invention relates to an improvement in that class of plows which are generally known as shovel plows, and are used in the cultivation of crops which are grown in hills or drills. The object of the invention is to obtain a simple, economical and durable plow of light draught, and one that may be managed or manipulated with the greatest facility.]

28,931.—Thomas Wilson, of Winterset, Iowa, for an Improvement in Seeding Machines:

I claim the arrangement of frame, C, set forth, in combination with the lever, G, toggle levers, k k, and clutching devices, e e g g, as set forth, whereby the dropping of the seed may be stopped and the plows raised from the ground at the same time.

[This invention consists in a novel arrangement of cranks, connecting rods and gearing placed in a carriage frame for operating the seed-distributor; in connection with a means for raising the front of this frame, and at the same time throwing the parts out of gear, for the purpose of moving the machine about from place to place without dropping the seed, the parts being so arranged that they may be thrown into gear by the driver at any moment.]

28,932.—E. M. Woodward and J. E. Woodward, of Philadelphia, Pa., for an Improvement in Railroad Station Indicators:

We claim the application of the hand, A, to an ordinary clock, used in combination with a dial having the various points along the route marked upon it; the whole be so arranged as to shew whether the car is in advance of or behind time at any point, substantially as described.

28,933.—L. B. Woolfolk, of Nashville, Tenn., for an an Improvement in Steam Plows:

I claim, first, The arrangement of the cylinder, S, rovided with bevel wheel, R, having the shaft, C, passed through it eccentrically, shaft, I, springs, g g, bevel wheels, f f, sleeves, i, pinion, G, rim, F, wheels, E, and plows, W, the whole being constructed in the manner and for the purpose described.

Second, I also claim, in combination with the above, the cylinders, S S2, sleeve, u, bevel wheel, R, and shaft, C, as described.

28,934.—Wm. Workman, of Ripon, Wis., for an Improvement in Seeding Machines:

I claim the combination of the principal seed box, C, and supplemental seed boxes, F, the latter being provided with inclined planes, h h, and wheels, H, and fitted in the trough, D, having the inclined bottom or scattering board, E, as and for the purpose set forth.

[This invention relates to an improvement in that class of seeding machines which are designed for sowing seed broadcast. The object of the invention is to effect an even distribution of the seed by a very simple arrangement of means, and to this end there are used, in connection with a seed-box or hopper, a scattering board and a number of supplemental hoppers, communicating with the main or principal one, and provided with seed-distributing wheels and inclined boards.]

28,935.—G. C. Wright, of Le Roy, Ohio, for an Improvement in Cutting and Coring Apples:

I claim the arrangement of the slide, E, cross-head, E, treadle, K, spring, L, and the cutting and coring knives, a b, the several parts being constructed and combined for operation in the manner described, for the purpose specified.

28,936.—Elijah Young, of Fayetteville, Mo., for an Improvement in Seed Planters:

I claim the use of the plows, B, in combination with tubes, D and C C′, and the boxes, E F, and the wheels, I and H, for the purpose specified.

28,937.—H. M. Zimmerman, of Washington, D. C., for an Improved Hinge:

I claim, as a new and improved article of manufacture, a butt hinge, constructed as specified, for the purposes set forth.

28,938.—D. C. Colby, of Newport, N. H., assignor to himself and J. P. Upham, of Claremont, N. H., for an Improvement in Harrows:

I claim, first, The arrangement of the toothed rollers, B B (and more than two if need be) at a greater or less angle with the line of draught, so that the teeth of the rollers shall cut the soil diagonally to the lines made by the stationary teeth, a a, &c., in the frame of the harrow.

Second, The frame of the harrow, composed of the side pieces, A A and A′ A′, the cross braces, C and D, and the connecting bar, E, arranged as described, so that the angle of the rollers, B B, with the line of draught and the width of the harrow may be raised when desired, thereby throwing the lines described by the two rear permanent teeth, a a, in the side pieces, A′ A′, outside or inside (as the case may be) of the lines described by the two permanent teeth, a a, in the side pieces, A A.

28,939.—Solomon Godfrey, Loren Barnes, Henry Blish and S. S. Smith, of Fairfield, Ohio, for an Improvement in Stills:

We claim, first, The combination of three or more chambers of a still with bent tubes, I G, radiating perforated tubes, O, and straight tubes, K L, when arranged in relation to each other, substantially in the manner and for the purposes set forth.

Second, The combination of the above with the heater and doubler, in the manner and for the purpose set forth.

28,940.—Joseph Ottner (assignor to P. and F. Corbin), of New Britain, Conn., for Improved Lifting Handles:

I claim the raised socket, e, having parallel slits, f, starting from the underside or edge of the sockets, and extending upward to the center (or nearly so) thereof, so as to hold the handle in a proper lifting position, with the double pivoted shanks, h, made to correspond to the chamber of the sockets so as to hold it (the handle) in place, as and for the purpose described.

28,941.—S. S. Sherwood (assignor to himself and Alexander Douglas), of New York City, for an Improvement in Skeleton Skirts:

I claim the combination of the device described for securing the braids or tapes from slipping laterally upon the hoops, by sewing the braid or tape through the covering of the hoop with the device described for securing the hoops from slipping upon the tapes or braids which form a vertical support by returning the braid or tape over the hoop and sewing it through itself, substantially as set forth.

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28,942.—T. C Simonton (assignor to De Grasse B. Fowler), of Paterson, N. J., for an Improvement in Filters:

I claim the placing of the tube, D, and the plates, B B, containing the filtering mediums, C, secured as described in the case, A, as shown, in connection with the pipes, E F G J, provided with the cocks, H I K, communicating with the case, and arranged relatively with the plates or the compartments formed thereby, to operate as and for the purpose set forth.

28,943.—J. L. Smith (assignor to himself and J Q. Sloan), of Neoga, Ill., for an Improvement in Corn Planters:

I claim the arrangement of the seed boxes, 8 9, slide, 10, crank, 11, lever, 12 13, operating as described for the purposes specified.

28,944.—A. W. Sweeny (assignor to himself and C. N. Tyler), of Washington, D. C., for an Improvement in Hinges:

I claim the described hinge as a new article of manufacture, the cam, latch and catch being constructed and arranged substantially in the manner and for the purposes set forth.

28,945.—Josiah Turner and T. P. Smith, of Sunapee, N. H., assignors to themselves and Edward Burke, of Newport, N. H., for an Improvement in Cultivator Teeth:

We claim, first, The coulter, A, with the indentation or recess, E, constructed substantially as described.

Second, The coulter, A, in combination with the concave wing, C, with the curved point, G, constructed and operated substantially as described.

28,946.—Joshua Turner, of Cambridgeport, Mass., assignor to himself and Francis Guild, of Dedham, Mass., for an Improvement in Plane-iron Sharpeners:

I claim the combination and arrangement of the separate cutter-carrier and its carriage with the whetstone supporter, with parallel ways or equivalent means of guiding the carriage, the whole being to operate together substantially as and for the purpose specified.

I also claim the arrangement of ball bearings on opposite sides of the cutter-carrier, and to operate with a socket of the carriage, as specified.

I also claim making the socket or step adjustable vertically for the purpose explained.

I also claim the combination and arrangement of an adjustable stop, with the table, the cutter-carrier and its carriage applied to the table and with reference to the whetstone or its supporter, as specified.

28,947.—M. D. Whipple, of Charleston, Mass., assignor to the Whipple File Company, for an Improvement in the Manufacture of Files:

I claim, as new article article of manufacture, a file having its teeth sheared off smooth and of an uniform hight, substantially as specified.

28,948.—J. A. Smith, of Fond du Lac, and Isaac Orvis, of Oakfield, Wis., administrator of the estate of L. M. Orvis, deceased, for an Improved Printing Press:

I claim, first, The arrangement of the form beds, I J, and stationary platen, K, substantially as shown, so that the imppression may be given simultaneously and by the same application of power, and the under side of the upper form be made to serve as a platen for the lower one.

Second, The arrangement of the form beds, I J, and platen, K, with the roll of paper, O, substantially as shown, and operated respectly and intermittingly, so that the paper may be printed from a continuous sheet and at both sides during a single passage through the press.

Third, The endless wet blanket, N, arranged to pass underneath the platen, K, and to be moved simultaneously with the paper, O, for the purpose of moistening the same during the pressure which causes the paper to receive the impression from the forms.

Fourth, The ink rollers, k k k' k', operated through the medium of the bars, h i, arms, g, rockshaft, G, the slotted curved bar, F, and wristpin, e, on wheel, d, when said rollers are used in connection with the form beds, I J, and platen, K, as set forth.

Fifth, The combination of the form beds, I J, platen, K, endless blanket, N, ink rollers, k k k' k', paper roll, O, rotary knife, R, and stationary bar, S, all arranged for joint operation as and for the purpose set forth.

RE-ISSUES.

Seligman Kakeles, of New York City, for an Improvement in Fluid Lenses. Patented April 24, 1860:

I claim, first, The application and use of a magnet, or its equivalent, in the bottom a glass globe filled with a colored fluid, for the purpose as set forth.

Second, I claim the arrangement and combination in a lantern of a light and glass globe filled with a colored liquid, when said globe is surrounded by two reflectors facing opposite directions, and when said light is placed either before or behind the glass globe, so as to produce and reflect, by the use of only one light, a colored light in one direction and a white or colorless light in the opposite direction, in the manner substantially as described.

Thomas Mitchell, of Lansingburgh, N. Y., for an Improved Machine for Finishing Hair Brush Handles. Patented June 28, 1859:

I claim, first, The employment, in combination with the brush clamp, G, or pattern, H, or their equivalents, of a wheel, D, which is provided with V, or gouge-shaped cutters, b, or their equivalents, and which act upon the wood, substantially as and for the purposes shown and described.

Second, The combination with the pattern, H (of the brush clamp), of a supporting ledge or projection, a*, or its equivalent, as and for the purpose shown and described.

Third, The combination of the guide, F, with the pattern, H, and cutter, D, as and for the purpose shown and described,

Fourth, Centering the unfinished brushes in the clamp, G, by means of the bristles, i, in connection with the strip or plate, J, and the inner curved edge, H, on its extension, H', substantially as described.

Cæsar Newmann, of New York City, for an Improvement in Skeleton Hoop Skirts. Patented Nov. 1, 1859:

I claim a skeleton skirt constructed as described.

ADDITIONAL IMPROVEMENTS.

B. B. Briggs, of Sharon, Ohio, for an Improvement in Apparatuses for Laying Drain Tile. Patented Oct. 4, 1859:

I claim the described ball, B, the double-acting clutches or fingers, F F, with its notched slide, g, and lock attachment, H, the mole attachments as in Fig. 2, when used in combination with the rope, R, or its equivalent.

Daniel Jones, of Boston, Mass., for an Improved Steering Apparatus. Patented Feb. 21, 1860:

I claim the arrangement and combination of parts described, the same consisting in placing the athwartship screw, H, directly above the rudder post, and operating it by means of a bevel wheel fixed at its middle and gearing into a similar wheel on the after end of the shaft of the steering wheel, all substantially as set forth and shown.

J. H. Shrote, of Baltimore, Md., for an Improvement in Cutting and Panning Cakes. Patented Oct. 11, 1859:

I claim the scrap clearer, B, the annular jumble cutters, C, and the bottoms, A and A', substantially as and for the purposes specified.

E. M. Smith, of Indianapolis, Ind., assignor to himself and E. G. Mayhew, of Shelbyville, Ind., for an Improvement in Molding Machines. Patented Feb. 21, 1860:

I claim the circular guide or rest, O, and the spring, Z, when constructed as and used for the purposes substantially as set forth.

Notes & Queries.

CORRESPONDENTS sending communications for publication in our columns are requested to avoid writing on both sides of a sheet of paper. This fault, though common to persons unaccustomed to writing for the press, gives great trouble to the printer (especially in long articles), and, when combined with illegibility of handwriting, often causes interesting contributions to be regretfully consigned to our waste-paper basket.

L. C., of Conn.—A rectangular knee, of the same bore, put on a vertical pipe, under any head, will involve but little if any loss of flow, and will be proportioned under all heads. With regard to horizontal pipes with elbows, there are various opinions as to the loss, but the amount is considerable. It is so easy to construct pipes differently, that it is foolish to lose any of the flow by such an arrangement.

S. R. M., of Del.—We do not know where you can obtain a work on the masonry of chimneys.

A. W. C., of Mass.—The best method of removing the stains on jewelry, caused by soldering, is by polishing with "crocus," in the usual manner.

W. S. T., of Pa.—To make black japan, take ground burnt umber, ½ a pound, and asphaltum, 4 ounces; dissolve them in boiling linseed oil, so that it will be about the thickness of molasses, when finished. It is now cooled and thinned with turpentine, so that it may be put on with a brush. If 2 ounces of the sulphate of zinc are added cautiously, it will dry more rapidly.

B. & C., of Md.—Fire-brick or soapstone is the best material you can employ as non-conductors above your fire-place stove. If you can make plaster-of-paris adhere, it will perhaps answer as good a purpose.

G. J., of Del.—There is no reliable rule for determining the pressure of gas in main pipes, by the pressure at the station. The best way to ascertain the pressure at any part is by the gage. You will find some useful information on this subject in another column.

J. W. R., of Ohio.—Iron can be coated with brass, by first cleaning it, then giving it a coat of tin, upon the top of which the brass will adhere. We do not know of any other good method than this for brassing iron.

H. K., of N. H.—You can dye a good brown color on wool with camwood, logwood and fustic. On cotton, a good brown is colored with catechu, sulphate of copper and bichromate of potash.

W. H. W., of Mass.—We prefer the plate to the cylindrical electrical machine, for experimenting.

G. W. F., of Ind.—The best method of polishing brass, is to scour it first with fine brickdust and very dilute sulphuric acid. Afterwards wash it with warm soft water, then rub down with fine emery and finish with tripoli or whiting.

E. G. W. R., of Ind.—Particles of steel which fly from tools and remain a long time in the flesh without rusting, are protected from the action of oxygen.

P. K., of Mich.—A globe filled with compressed air, at a pressure of 30 pounds on the square inch, is heavier than one filled with air at atmospheric pressure, and will be less buoyant in water, unless the heat of the water exceed that of the atmosphere.

E. B., of N. Y.—Any good work on hydraulics will furnish you with rules to calculate the amount of water under different heads, for different horse-powers. Under a 9-foot head the actual velocity will be 15.3 feet per second, or 918 feet per minute. A horse-power is equal to 550 pounds lifted one foot in a second. On a fall of 9 feet, 36 pounds of water falling per second is equal to a horse-power.

T. McK., of Va.—The gloss put upon shirt collars made in fac ories is done by pressure and friction upon curved surfaces of hard pasteboard. The linen must be pressed upon a hard, smooth surface or no gloss will be produced. Those who make it a business to dress linen have all the necessary appliances to glaze it. All kinds of cotton and linen cloth can be glazed by pressure and friction between smooth rollers; this is the way calico is calendered and glazed.

C. J. F., of N. J.—No definite speed, as a fixed standard, can be given to a circular saw. The speed at which one of any size should be driven depends on the hardness of the wood to be cut, the mode in which the saw is hung and the form and sharpness of the teeth. It is only by practice that the most suitable speed for any saw can be determined.

MONEY RECEIVED

At the Scientific American Office on account of Patent Office business, for the week ending Saturday, June 30, 1860:—

N. & McN., of N. Y., $45; E. D., of Mass., $30; W. A. T., of Miss., $30; L. W. N., of N. Y., $30; J. H. S., of La., $12; E. G., of Mo., $25; P. B., of N. Y., $35; J. B. T., of N. Y., $30; G. B. P., of N. Y., $150; G. H. G., of Miss., $25; D. B., of Mich., $10; J. F. W., of La., $25; E. B. & T. S. P., of N. Y., $25; G. L. T., of N. Y., $32; G. W. H., of Ill., $35; R. & W., of Iowa, $10; J. F. F., of S. C., $30; T. C. H., of Ga., $25; S. D. McC., of Ky., $30; W. & W., of Ill., $30; C. H. L., of R. I., $30; J. D., of Mass., $25; R. G. H., of N. Y., $30; F. H., of S. C., $25; W. W. M., of Mo., $25; O. D., of Md., $32; F. & C., of Iowa, $30; W. R. C., of Ill., $30; M. K. P., of N. Y., $30; J. M. H., of Miss., $25; S. C. A., of Ark., $30; V. R., of Mass., $30; J. E. W., of Pa., $25; W. C. of Ohio, $30; S. A., of N. Y., $25; L. W. T., of Minn., $30; J. W., of Ill., $35; E. B., of Ga., $30; J. W. C., of N. Y., $30; P. D., of R. I., $55; W. T., of N. Y. $30; J. S. D., of Ohio, $25; J. G. W., of N. Y., $50; H. Y. W., of Pa., $25; D. W. W., of Ohio, $35; L. W., of Mass., $30; C. P. B., of Ohio, $30; L. H. F., of Pa., $10; I. W., of Vt., $25; L. P., of Mass., $30; A. S., of N. Y., $30; R. W. P., of Mass., $25; J. K., of N. J., $30; M. L. C., of N. Y., $30; W. H. O., of N. Y., $30; D. S., of Cal., $200; J. O., of Conn., $30; N. J., of N. Y., $30; W. R., Jr., of Pa., $50; S. L. of Vt., $30; W. & K., of Iowa, $25; W. H., Jr., of N. Y., $30; H. C. D., of Mass., $30; S. H., of Mich., $30; S. P. G., of Wis., $25; P. & R., of Tenn., $35; S. A., of Mo., $30; J. S., of N. Y., $45; K. D. & Co., of N. Y., $25; S. F. Van C., of Cal., $12; G. W. L., of N. Y., $55; M. D., of Minn., $30; P. K., of R. I., $35; W. S. L., of Ohio, $10; R. T., of Iowa, $25; A. H., of Iowa, $25; H. & G., of Ill., $55; R. G. H., of N. Y., $30; A. W., of N. Y., $25; J. F. K., of N. Y., $25; H. E., of N. Y., $25; M. C., of Mass., $55; J. F. P., of Mo., $30; W. H. B., of Conn., $30; C. W., of Va., $30; W. M. G., of Ohio, $25; T. A. G., of Ill., $25; E. W. G., of Mass., $30; J. H. B., of Mo., $30; J. H., of N. J., $25; S. & G., of Vt., $35; J. H. B., of N. Y., $30; J. C., of N. Y., $25; S. A. La F. & Co., $250; G. W. L., of N. Y., $55; D. S. H., of N. Y., $30.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, June 30, 1860:—

J. T., of La.; A. W., of N. Y.; E. G., of Mo.; J. H. S., of La.; R. J. H., of Ohio; W. F., of Mass.; E. B. & T. S. P., of N. Y.; W. W. M., of Mo.; J. W. C., of N. Y.; G. L. T., of N. Y.; S. A., of N. Y.; S. S., of Mass.; W. M. G., of Ohio; R. T., of Iowa; T. A. G., of Ill.; J. D., of Mass.; J. H., of N. J.; J. E. W., of Pa.; W. T. Z., of Tenn.; J. M. H., of Miss.; I. W., of Vt.; P. B., of N. Y.; H. Y. W., of Pa.; K. & W., of Iowa; H. E., of N. Y.; W. B. Q., of Ill.; D. W. W., of Ohio; P. & R., of Tenn.; A. H., of Iowa; R. S., of Ill.' J. S. D., of Ohio; S. A., of Mo.; J. S., of N. Y. (2 cases); J. G. M., of N. Y.; J. F. K., of N. Y.; G. H. G., Sr., of Miss.; R. W. P., of Mass.; F. H., of S. C.; W. R., Jr., of Pa.; K. D. & Co., of N. Y.; W. D. M., of Va.; A. H. B., of N. Y.; S. F. Van C., of Cal.; S. P. G., of Wis.; C. W., of Va.; S. & G., of Vt.; J. C., of N. Y.

SCRUBBING BRUSHES, FLESH BRUSHES, Hand Brushes, Nail Brushes, &c.—For a good valuable article, see illustration on page 400, last volume of the SCIENTIFIC AMERICAN. 2 3

THE WATER CURE JOURNAL FOR JULY, now ready, contains:—Hygienic and Drug Medication Contrasted; Diseases of the Throat and Lungs; Home Practice of the Movement Cure—Treatment of the Croup; A Family Necessity; A Homœpathic Dose; Dr. Winship's Experience; The Cattle Disease; Collusion Between Doctors and Druggists, and much other matter useful to every reader. A NEW VOLUME commences with the present number, and now is the time to subscribe. Only $1 a year. Address FOWLER & WELLS, No. 308 Broadway, New York. 2 2

THE SWEDISH MOVEMENT CURE—ITS HISTORY and Philosophy, with practical directions for the treatment of various diseases; illustrated with 70 engravings, forming a complete Manual of Exercises. By Geo. H. Taylor, M.D. 1 vol., 12mo, 400 pages. Price, prepaid by mail, $1.25. Address FOWLER & WELLS, No. 308 Broadway, New York. This is the first complete work on this subject published in America. It will be found useful to all classes, in or out of the profession, and to all men, women and children. 2 2

E. D. & G. DRAPER, HOPEDALE, MILFORD, Mass., make and furnish to order Dutcher's Patent Temples, the best in use for all kinds of goods; Perry's Patent Parallel Shuttle Motions, Patent Let-off Motions for Looms, Stearn's Patent Shuttle Motions, Patent Weighting Apparatuses for Top Rolls to Railway Heads and Drawing Frames, Robbin's Patent Shuttle Guides, Hayden & Wylly's Patent Drawing Regulators or Eveners, Thompson's Patent Oilers, Parker's Patent Spindle Steps, Houghton's Patent Brushes, Hussey's Patent Dresser Speed Regulator. 2 4*

THE PATENT RIGHT TO PUSEY'S GOVernor, for Railroad Horse-powers, for sale.—On account of engagements which prevent me from giving it proper attention, I will sell my right and title to this valuable little Governor, now generally introduced and selling throughout the United States.
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TO SEWING MACHINE MANUFACTURERS.—Rights for sale for Goodes & Miller's improved Button-hole and Over-seaming Machine, for working button-holes, eyelet-holes, ladies' embroidery, or for cording or braiding the edges of garments. It is just the thing for glove, stocking, bag, sail, awning-makers and tailors, as the sewing done on this Machine has all the appearance of a fine corded edge, or, with a change of tension, resembles braiding. It is extremely simple in construction, and not liable to get out of order. Full particulars and specimens of work sent, on application to GOODES & MILLER, No. 1,244 Olive-street, Philadelphia, Pa. 2 2*

BOILER EXPLOSIONS.—NO BOILER SHOULD be without a good Steam and Water Gage. An excellent assortment of the above constantly on hand, at makers' lowest prices. All Gages accurately tested and warranted correct.
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WARREN'S TURBINE WATER WHEEL (Warren & Damon's patent), manufactured by the American Water Wheel Company, Boston.—This Wheel stands at the head for great economy in water. Over 600 are now operating with great success in cotton and woolen factories, &c., &c. With its modern improvements, it cannot be surpassed. Send for our 7th annual pamphlet of 1860 (inclose two stamps), containing a treatise on hydraulics, beautiful illustrations of the Warren Turbine, practical rules for computing water-power, prices, &c., &c. It is the Wheel for the North, because ice does not affect it; for the South, because it is compact and ready to attach and operate without great mechanical skill: for the world, because it generates more available power from the water used than any other Water Wheel in existence. Address A. WARREN, Agent, No. 31 Exchange-street, Boston, Mass. 2 6*

LESTER'S SEWING MACHINES—FOR MANUfacturing and for family use, as good as any in the market, manufactured under legal rights from Elias Howe, Jr., Wheeler & Wilson, Grover & Baker, I. M Singer & Co., with their combined improvements, at prices from $50 to $130. Large commissions allowed to local agents to purchase to sell again. Agents wanted throughout the country, and especially in the South, as this machine is to be manufactured expressly at Richmond, Va., as soon as the buildings which are now being put up are completed. Address the Lester Manufacturing Company, Richmond, Va., or J. H. LESTER, No. 57 Pearl-street, Brooklyn, N. Y. 2 5eow

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CONSOLIDATION OF THE "AMERICAN" AND "NATIONAL" STEAM GAGE COMPANIES.—The "National Steam Gage Company" hereby give notice to their friends and the public that, having made a mutual arrangement with the "American Steam Gage Company" whereby the whole business of the two companies has been consolidated, all orders for gages heretofore made by the "National Steam Gage Company," under the patents of E. G. Allen, should be addressed hereafter to the "American Steam Gage Company," they having, by assignment, become the exclusive owners of said patents, and the rights to manufacture under them. Thanking our numerous friends for their generous patronage extended to us, we assure them that all orders addressed to the "American Steam Gage Company," for instruments heretofore manufactured by us, will be filled promptly, and with gages made in a style and finish equal to those heretofore made.

N. HUNT, President.
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The American Steam Gage Company will continue to manufacture the "Bourdon" Gage, and "T. W. Lane's improvement" on the same, as heretofore, and also all instruments heretofore made by the "National Steam Gage Company," under the various patents of E. G. Allen, and trust that their extended facilities for manufacturing will enable them to fill all orders in the best style of workmanship and finish. All orders for gages heretofore made and sold by the "National Steam Gage Company," under the patents of E. G. Allen, should hereafter be addressed to the "American Steam Gage Company," No. 4 Charlestown-street, Boston.

W. P. NEWELL, President.
S. T. SANBORN, Treasurer.
H. K. MOORE, Superintendent.
1 2*

$4.500 REWARD TO INVENTORS!—THE undersigned, on behalf of a committee appointed by the merchants and others of New Bedford, Mass., hereby offer the following premiums for the best stand and portable hand lamps, designed to be used for the burning of manufactured whale oil:—

For the best stand lamp $3,000
For the second-best stand lamp 300
For the best portable or hand lamp 1,000
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All lamps offered for the premiums must be submitted to the committee at New Bedford, on or before the 30th day of August, 1860. The committee reserve the right to test all lamps submitted to them, and to reject all if, in their judgment, no one is deemed worthy of acceptance. They also will require the inventor to secure Letters Patent for the inventions which may be approved by them, if they deem it expedient, and to place the same, by proper assignment, under the control of the committee, upon such terms as may be agreed upon between them, JOSEPH GRINNELL, Chairman.
MATTHEW HOLLAND, Secretary. 1 2*

FOR SALE OR TO LET—THE ESTATE, IN Lynn, Mass., lately leased by J. B. Bigelow & Co., of Boston, consisting of 8 acres of land, two 3½ story buildings—one 35 by 100 feet and one 40 by 85 feet; two storehouses, one 30 by 50 and one 20 by 100 feet, and other outbuildings; 7 tenement houses; 8-horse water-power (unfailing); 20-horse steam engine—all in good repair. Buildings heated by steam. A constant supply of THE BEST WATER IN THE STATE for chemical or mechanical purposes. Ten miles, by railroad, from Boston; labor plenty. Offers rare facilities for paper, morocco, paper-hangings or dye-house business. Possession given August 1, 1860. Apply to JOHN P. WOODBURY, Lynn, or T. RADDIN, No. 30 Pearl-street, Boston, Mass. 1 2*

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PORTER'S CENTRIFUGAL GOVERNOR.—THE attention of parties troubled with irregular or unsteady power is respectfully called to this Governor, now coming into general use. It may be used in connection with any valve or cut-off, and will regulate the motion of the engine so perfectly that its entire load may be thrown on or off at once, without sensibly affecting its speed. I will send a Governor to any responsible person for trial; and if its action is not perfect under the above test, it may be returned. Prices exceedingly moderate. All orders and communications will receive prompt attention. Send for a circular.
Address CHAS. T. PORTER, 235 West Thirteenth-street, corner of Ninth-avenue, New York. A few reliable agents wanted.
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PORTABLE STEAM ENGINES, COMBINING the maximum of efficiency, durability and economy with the minimum of weight and price. They received the large gold medal of the American Institute, at their late fair, as "the best Portable Steam Engine." Descriptive circulars sent on application. Address J. C. HOADLEY, Lawrence, Mass. 1 22*

PUMPS! PUMPS!! PUMPS!!!—CARY'S IMproved Rotary Force Pump, unrivaled for pumping hot or cold liquids. Manufactured and sold by CARY & BRAINERD, Brockport, N. Y. Also, sold by J. C. CARY, No. 2 Astor House, New York City. 23 13

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H. DAWSON & SON, MANUFACTURERS OF all kinds of spring knitting needles, Cohoes, N. Y.—Having lately increased our facilities for manufacturing, we shall be able to fill all orders with promptness, from the very best wire, made expressly for spring needles. Address H. DAWSON & SON, Cohoes, N. Y. 1 4*

WANTED—A SITUATION, BY A MAN OF industrious and steady habits, who is capable of taking charge of a machine-shop, or of superintending the erection of mills and machinery for the same. Address MACHINIST, Harrison-square, Mass. References exchanged. 1 2*

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WOODWORTH PLANING MACHINES FROM $80 to $150.—Sash-molding, tenoning and mortising machines at low prices. For sale at the Philadelphia Machinery Depot, No. 135 North Third-street. [1 13*] CHAS. H. SMITH.

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THE MASSACHUSETTS CHARITABLE MEchanic Association respectfully announce to the public their ninth exhibition of American manufactures and mechanic arts, to be opened at Faneuil and Quincy Halls, on Wednesday, the 12th of September, in the city of Boston. Communication from those who wish more particular information, and from those who will require much space, may be addressed to the subscriber.
1 6* JOSEPH L. BATES, Secretary.

NOTICE.—TO MANUFACTURERS OF WOOD LATHES.—Wanted, lathes for turning handles for axes, picks, hatchets, &c. Address, with full particulars, E. & S., Box 316, Trenton, N. J 1 2*

IMPORTANT TO MECHANICS.—THE VARIETY MOLDING MACHINE.—This machine is a combination of six patents, and superior to all others for shaping, planing and molding irregular forms; also straight molding and planing. It is simple and safe to the operator. See illustration on page 329, Vol. I., of the SCIENTIFIC AMERICAN. Send for circular. Address S. M. HAMILTON, Baltimore, Md. 1 13*

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BOARDMAN'S IMPROVED METALLIC CARRIAGE HUB.

Various modifications of metal hubs for carriage wheels have been used, but great difficulty, has been experienced in rendering them easily fitted, adjusted, repaired and, at the same time, firm and not likely to work loose. The objects of the hub shown in this illustration are to obviate the defects pointed out, and to secure the advantages of durability and facility of adjustment in a very simple and effectual manner.

A is the cast iron hub, having grooved chambers, B, to receive the spokes, C, which are inserted and fitted into them. The ends of the spokes are beveled to an edge, and when one of them works loose, an angular-shaped wedge, D, of metal or other material, is inserted at the point into the chamber, B, which thus tightens the loose spoke, without interfering with any of the others. In this manner the tire may be always kept tight, without requiring to be re-set, which saves a great deal of trouble. E are clamps or metal plates secured to the hub by the screw bolts, F, for the purpose of securing the spokes in the hub. By means of these plates a single spoke may be taken out, if injured, and replaced with a new one, without taking the whole hub or wheel apart.

Fig. 1

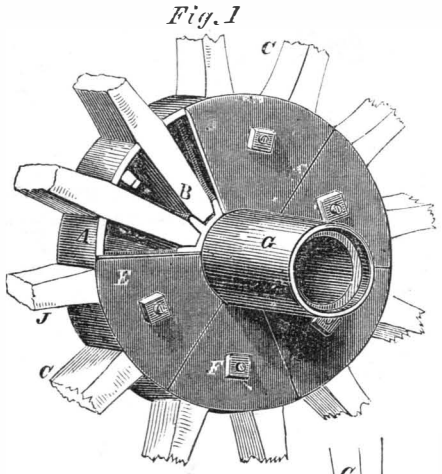


Fig. 2

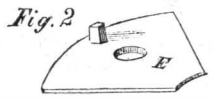
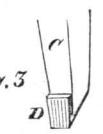


Fig. 3



A loose spoke may be tightened by a wedge with equal facility. G is the box in the hub. We are informed that a set of these hubs have been in use on a heavy two-horse wagon for two years, and that they have required no repairs, and are apparently as good as new, although they have been subjected to very severe tests. These spokes, having no tenons at the hub ends, are inserted much further than in the wooden hub, and are consequently stronger. On a wheel having this hub a tire never requires re-setting. These hubs are equally well adapted to the lightest carriage and to the heaviest wagons and carts, and possess many advantages over the wooden hub. More information may be obtained by letter addressed to Spencer, Boardman & Co., Lancaster, Pa.

NEW ADJUSTABLE WINDOW STOP.

The sash of a window is kept in place by a vertical strip called a *stop*, which extends from the top to the bottom, and is generally fastened to the window casing with small nails. These stops are not adjustable to fit snug or loose, as may be desired; and they are not readily detached to permit the sash being taken out for the purposes of glazing, washing, painting, &c. In removing common stops, the paint is frequently injured, and the removal of the nails oftentimes causes the stops to be broken. The invention represented in the accompanying figures is designed to obviate these defects, by providing a simple fastening for securing the stops, by rendering them easily adjusted—tight or loose—and capable of easy removal and replacement.

Fig. 1 is a vertical section of a window, with the invention applied to it; Fig. 2 is an enlarged section of the invention applied to a window; Fig. 3 is a view of the screw socket; and Fig. 4 a view of the small slotted plate for the stop to render it adjustable.

A represents a window casing; B is the upper and C the lower sash; D is the *stop* of the window (there is one at each side) secured in the inner sides of the casing to retain the lower sash, C. In each stop, at about its center, there is fitted the small metal plate, *a*, Fig. 4, with an oblong slot, *b*, in it, and a corresponding opening is made in the stop. In the stile or jamb, *c*, of the casing, and in line with the plate, Fig. 4, a socket nut, *d*, Fig. 3, is fitted. It has a screw on its outside to secure it in the case, and it has a thread cut in its inside to

Fig. 1

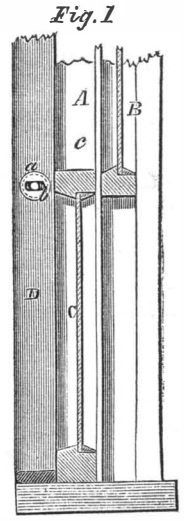


Fig. 2

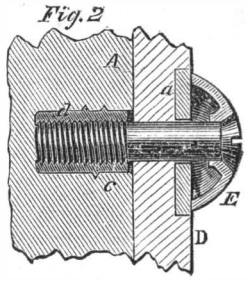


Fig. 3

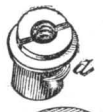


Fig. 4

receive the adjusting screw of the stop. A notch is cut on its outer end for screwing it in with a driver. E is a small sectional globe washer, Fig. 2, through which the screw, F, passes, and is made to fit snugly, and secure the stop, D, to its place in the casing. This is the entire fastening. In order to remove the stop, D, to permit the sash being taken out, the screw, F, has but to be turned fully backward; and in order to adjust the stop close to the sash, the screw, F, has just to be slightly unscrewed, when the oblong slot of the plate, *a*, will permit the stop to be set nearer to or further from the sash, and thus a ready adjustment is effected. It will be readily perceived that from the application of this simple fastening to windows, the stops can be easily detached and adjusted for the purposes stated. The invention is simple and efficient, and may be applied to any window, and either one or more to a stop, according to the size.

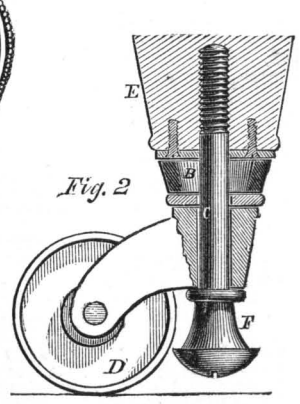
The patent for this invention was granted on the 20th of March last. More information may be obtained by letter addressed to the inventor, Mark Howland, of Waterbury, Conn.

FRY'S IMPROVED FURNITURE CASTER.

The chair and sofa caster in common use is very defective in its construction, and is therefore attended with several disadvantages. The point of bearing of the chair upon the wheel of the common caster is so far from the center that it is liable to get out of order, by bending the central stock. The legs of chairs—especially those which are slender or curved, embracing those which

Fig. 1

Fig. 2



are the most costly—are frequently broken by persons sitting down upon them suddenly, or when the chairs are drawn across a carpeted floor and meet with some obstruction. To overcome such defects, also to insure the caster rolling straight, when moving, are the objects of the invention illustrated in the accompanying figures, representing a side elevation and a vertical section.

C is the central stock or spindle which passes through the collar of the caster, D, and into the metal socket, E, in the leg of the chair. The stock has a permanent cap, F, in its base, and the wheel revolves on the stock with freedom. A spring of india-rubber or metal, B, is placed around the central stock, C, to operate with the caster, D, in such a manner as to support the weight of the chair when it is empty, thus upholding it on the spring. When, therefore, a heavy person sits on such a chair, the springs will permit the caster or wheel to slide up, and the chair will then be supported firmly on the floor by means of the cap, F.

This improvement also permits the bearings of a chair to be placed at a proper distance from the central stock, as the wheels have great freedom to present their proper sides to the line of travel. To avoid strain on the legs and stocks, some casters have been made with their bearing points upon the wheel, so near the central stock that the roller could not turn round readily, but presented flat sides to the line of travel, thus making them slide, instead of rolling upon the carpet. These defects are obviated by this useful improvement, for which a patent was granted, on the 10th of April last, to Mr. Thomas Fry, No. 120 Fulton-street, Brooklyn, L. I., from whom more information may be obtained by letter.

A WIND WAGON.—A western genius lately constructed a wind wagon to bear him to Pike's Peak, which has realized his most sanguine expectations—carrying him through in 20 days. Encouraged by this success, other parties in the same town set about the construction of the same kind of wagons, and a party of eight started out on the prairies to try one which had been finished. The wind was blowing a gale at the time, and everything worked to a charm. The occupants, gliding swiftly over the prairies, were delighting themselves with anticipation of a speedy and comfortable trip to the mines, when the velocity of the vehicle created a lively alarm for their safety. The wagon sped onward before the driving wind faster and faster, until the axletrees broke and deposited them all on the ground, and in a somewhat damaged condition, from broken heads, bruised limbs and bodies. The speed of the machine is said to have been 40 miles per hour. We suggest the use of brakes.

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